# FLOODPLAIN MANAGEMENT STUDY
# PINE RIVER
# WAUSHARA COUNTY, WISCONSIN

**Prepared by:**
**United States Department of Agriculture**
**Soil Conservation Service**
**Madison, Wisconsin**

**In cooperation with:**
**Waushara County, Wisconsin**
**and the**
**Wisconsin Department of Natural Resources**

**April 1989**

United States
Department of
Agriculture

Soil
Conservation
Service

6515 Watts Road, Suite 200
Madison, WI 53719-2726

May 1, 1989

National Agricultural Library
Joseph H. Howard, Director
Beltsville, Maryland 20705

Dear Sir:

Enclosed is a copy of the recently completed "Floodplain Management Study Report for Pine River, Waushara County, Wisconsin." This study was made at the request of the Waushara County through the Wisconsin Department of Natural Resources in accordance with the Department's joint agreement with the Soil Conservation Service.

This study was carried out in accordance with Federal Level Recommendation 3 of a "Unified National Program for Floodplain Management," and Section 6 of Public Law 83-566. The principles contained in Executive Order 11988, Floodplain Management, are addressed in this part. The purpose of the study is to make flood hazard and land use information available to the local government and citizens. It's intent is to promote proper land use.

The Soil Conservation Service's objective in developing this technical data is to help reduce present and potential flood damages through wise use of floodplain lands thereby improving the health, safety, economy, and the environmental condition of the county.

Sincerely,

for Charles R. Cobb

DUANE JOHNSON
State Conservationist

Enclosure

Appendices

Waushara County Floodplain Management Study
Pine River

901696

## Introduction

The purpose of this study is to define the flood characteristics of the Pine River from the Village of Poy Sippi to the junction with the outlet of Wilson Lake, Carpenter Creek from its junction to County Highway NN, Little Silver Creek from its junction to the center of Sec. 9, T. 20 N., R. 12 E., and Popple Creek from its junction to 26th Road. Waushara County requested the study through the Wisconsin Department of Natural Resources (DNR).

This report is prepared for use by the county in planning the use and regulation of the floodplains of the Pine River, Carpenter, Little Silver and Popple Creeks.

The 100-year floodplain combined with the dam failure analysis has been delineated on the photomaps. The high water elevations and floodplain delineations are based on 5-year projected land use of the watershed. The existing stream, floodplain, and road crossings were utilized for the hydraulic analysis.

The Soil Conservation Service carries out floodplain management studies in accordance with Federal Level Recommendation 3 of "A Unified National Program for Floodplain Management," and Section 6 of Public Law 83-566. The principles contained in Executive Order 11988, Floodplain Management, are addressed in this part.

In Wisconsin, the Soil Conservation Service coordinates floodplain management studies with the Wisconsin DNR, through a joint coordination agreement entered into in October 1978. The Wisconsin Water Resources Act (Chapter 614, Laws of Wisconsin, 1965) authorizes the DNR, Division of Enforcement, to establish and upgrade minimum standards for floodplain regulations.

## Study Area Description

Pine River is located in east central Waushara County. Waushara County is located in central Wisconsin. The study area consists of the floodplain adjacent to 17 miles of the Pine River.

The downstream study limit is the east section line of Sec. 7, T. 19 N., R. 12 E. The upstream study limit is the west section line of Sec. 26, T. 20 N., R. 11 E. Carpenter Creek was studied for a distance of 0.76 miles from its confluence to just above County Highway NN. Little Silver Creek was studied a distance of 1.84 miles from its confluence to a point near the north quarter corner of Sec. 9, T. 19 N., R. 12 E. or the corner of E, H and Beaver Avenue. Popple Creek was studied for a distance of 0.43 miles from its confluence to just above 26th Road.

A summary of the directly contributing drainage area followed by the noncontributing areas such as potholes and lake are as follows:

| Pine River: | Contributing | + | Noncontributing | = | Total |
|---|---|---|---|---|---|
| Upper study limit | 30 sq.mi. | | 23.0 sq.mi. | | 53.0 sq.mi. |
| Saxville Dam | 34.2 sq.mi. | | 23.4 sq.mi. | | 57.6 sq.mi. |
| Pine River Dam | 40.0 sq.mi. | | 24.7 sq.mi. | | 64.7 sq.mi. |
| Below confluence of Carpenter Creek | 53.11 sq.mi. | | 25.3 sq.mi. | | 78.41 sq.mi. |
| Below confluence of Little Silver Creek | 63.25 sq.mi. | | 29.1 sq.mi. | | 92.35 sq.mi. |
| Poy Sippi | 70.3 sq.mi. | | 29.1 sq.mi. | | 99.4 sq.mi. |
| Lower study limit | 70.7 sq.mi. | | 29.1 sq.mi. | | 99.8 sq.mi. |
| Carpenter Creek | | | | | |
| Upper study limit | 12.1 sq.mi. | | 0.6 sq.mi. | | 12.7 sq.mi. |
| At confluence | 12.4 sq.mi. | | 0.6 sq.mi. | | 13.0 sq.mi. |
| Little Silver Creek | | | | | |
| Upper study limit | 8.36 sq.mi. | | 0.18 sq.mi. | | 8.54 sq.mi. |
| Confluence | 10.14 sq.mi. | | 4.06 sq.mi. | | 14.2 sq.mi. |
| Popple Creek | | | | | |
| Upper study limit | 2.05 sq.mi. | | 0.46 sq.mi. | | 2.51 sq.mi. |
| Confluence | 3.17 sq.mi. | | 0.46 sq.mi. | | 3.63 sq.mi. |

The Pine River is in Hydrologic Unit 04030202180.

The climate is typically continental. January temperatures average 19 degrees F. July, the warmest month, has an average temperature of 73 degrees F. The average maximum for July is 85 degrees F with the average minimum at 61 degrees F. Precipitation averages 29 inches per year (8).

The soils of the watershed consist mostly of Plainfield-Okee-Richford association, described in the General Soil Map section of the Waushara County Soil Survey, which are strongly sloping to steep, somewhat excessively drained and excessively drained, sandy soils on moraines. The lowlands, east of Wild Rose of Little Silver Creek and upper Popple Creek are of the Kingsville-Mechan association, whose soils are nearly level and gently sloping, poorly drained and somewhat poorly drained, sandy, soils on outwash plains. The lowlands of Carpenter Creek are made up of Houghton-Adrian-Willette association soils which are nearly level, very poorly drained, muck soils on outwash plains, lake plains, or moraines.

## Natural and Beneficial Floodplain Values

The Pine River is a clear hardwater trout stream flowing through much of northern Waushara County. The portion of the river in the study area is generally referred to as the Lower Pine River. It is a class I trout stream down to 8 miles above the Poy Sippi millpond where it is a class II trout stream. Brown trout dominate the fishery of the Lower Pine.

The lower parts of three other trout streams are also in the study area. Carpenter Creek enters the Lower Pine approximately one mile east of the Village of Pine River. This is a class II trout stream containing mostly brown trout.

Popple Creek enters the Lower Pine just south of Saxville. It originates as an outlet to Baitenger Lake. It is a class I trout stream containing brown trout. Little Silver Creek flows east into the Lower Pine about 1-1/2 miles east of the Village of Pine River. It is a class I trout stream containing brown and brook trout.

Three millponds are located in the study area. The Saxville millpond (13.3 ac.) has a maximum depth of 3.5 feet. It contains largemouth bass, bluegill, and green sunfish. The Pine River millpond (28.3 ac.) has a maximum depth of 4 feet. It does contain some trout. The Poy Sippi millpond (57.3 ac.) has a maximum depth of 7 feet. White sucker is the dominant fish species. Other species present include the northern pike, largemouth bass, black bullhead, and redhorse.

The floodplain consists primarily of lowland tree and shrub species including willow, boxelder, ash, dogwood, and alder. The uplands surrounding the floodplain consist of woodlands of red pine, jack pine, and oak along with some cropland and idle grasslands. Because of the variety of vegetation cover types, much habitat is provided for a variety of wildlife species including white-tailed deer, ruffed grouse, cottontail rabbits, gray squirrels, red fox, mink, otter muskrats, beaver, and numerous birds. Waterfowl and shorebirds are found in the millponds.

Along with providing important wildlife habitat, the undeveloped floodplain provides a buffer to help filter runoff and provides a natural storage area for large amounts of floodwater during peak flows.

There are no known threatened or endangered species in the study area. There are no sites on the National Register of Historic Places. None of the streams are listed as being eligible for the National Wild and Scenic Rivers program. There is no prime farmland.

## Flooding Problems

No significant flash flooding occurs on the Pine River system. The numerous flowages, swamps, depressions, lakes and sandy soils store and release the water over a prolonged period. The increase in flow is handled by removing stoplogs or panels from the dams.

The Pine River dam washed out in July 1969 by overtopping of the embankment adjacent to the spillway. This was caused by a series of events rather than a flash flood. The spring of 1969 was wet with 3.77 inches of rain in April, 5.82 inches in May, and 6.20 inches in June. A large portion (4.24 inches) of the June rainfall occurred during the last week of June (25th to 30th). This 15.79 inches of rainfall, especially the last 4 inches, would have filled the depressional areas and swamps creating a wet hydrologic condition such that the 1.8 inches of rainfall on July 4th was mostly runoff. The excess water overtopped the Saxville dam by 5 to 6 inches. Panels were removed from the spillway to release the water and protect the dam. Downstream, the Pine River Dam failed and there was some concern for the dam structure at Poy Sippi.

## Existing Floodplain Management

Waushara County adapted a floodplain ordinance in 1986. The ordinance has been approved by the Wisconsin Department of Natural Resources. The county is ineligible for the National Flood Insurance Program and cannot receive disaster assitance or make federally insured loans in flood hazard areas. The county has submitted a letter to Federal Emergency Management Agency requesting participation in the program.

## Alternatives for Mitigating Flood Damages to Existing and Future Developments

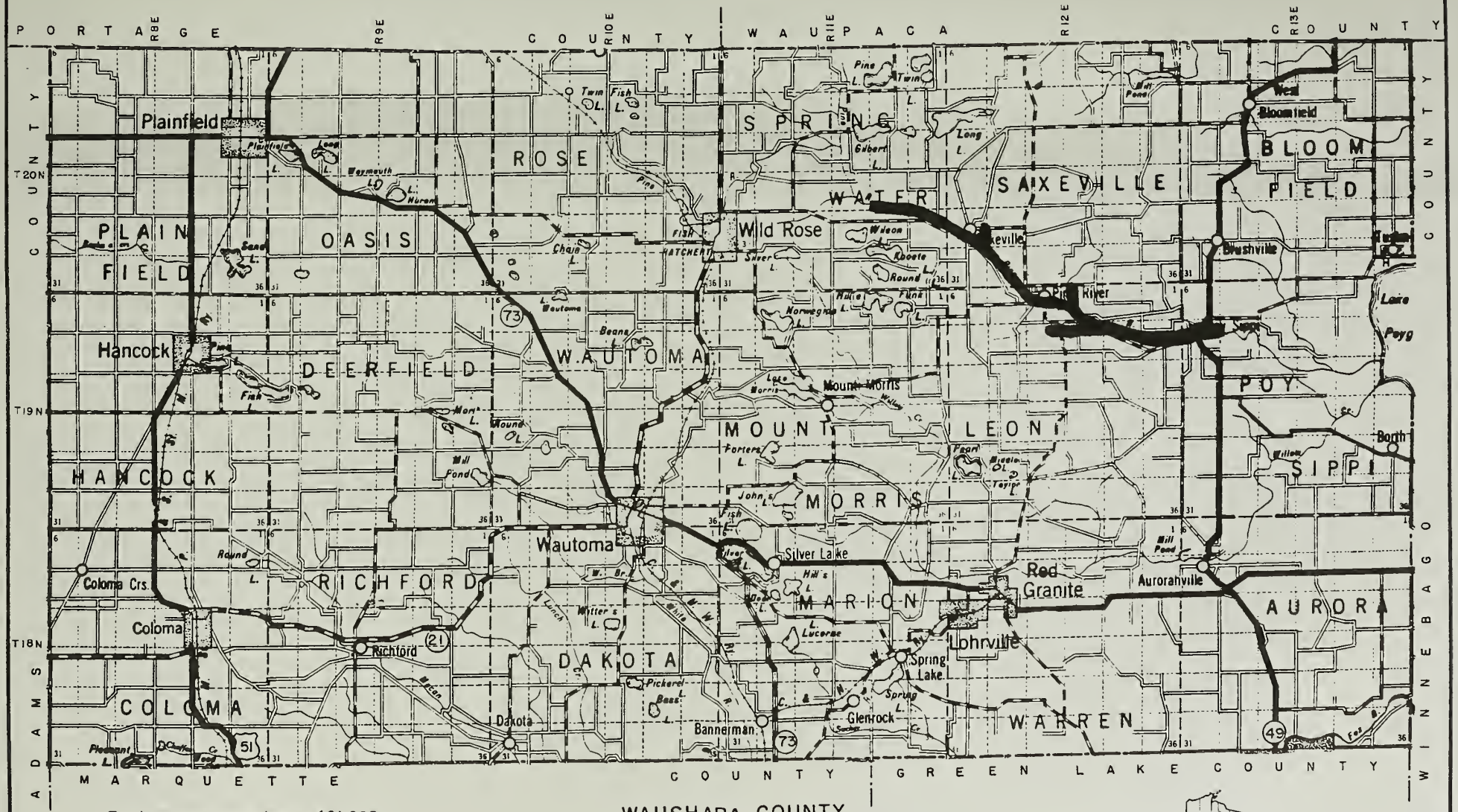
A. Incorporate the floodplain maps from this study into a floodplain ordinance and provide enforcement.

B. Apply existing standards set forth in the county's subdivision control ordinance to regulate development in nonsuitable areas and minimize erosion and diffused surface water runoff within the watershed.

C. Protect two buildings that are in the floodplain by floodproofing or removing from the floodplain.

D. Prepare a management plan for flowage operation on the river system. This plan could consist of monitoring the hydrologic condition of the watershed and operating outlet works accordingly. The dam operator should have a standard operating procedure that includes notifying the downstream dam operators of operation changes.

E. Automate the outlet works utilizing the existing control equipment for the hydroelectric generators at Pine River and Poy Sippi.




Total acreage approximote 401,995

# WAUSHARA COUNTY
# SOIL CONSERVATION DISTRICT

The District includes all
of Waushara County, Wisconsin

LOCATION IN
WISCONSIN

Prepared by the Cartographic Division, Soil Conservation Service. Cooperating with the District Governing Body

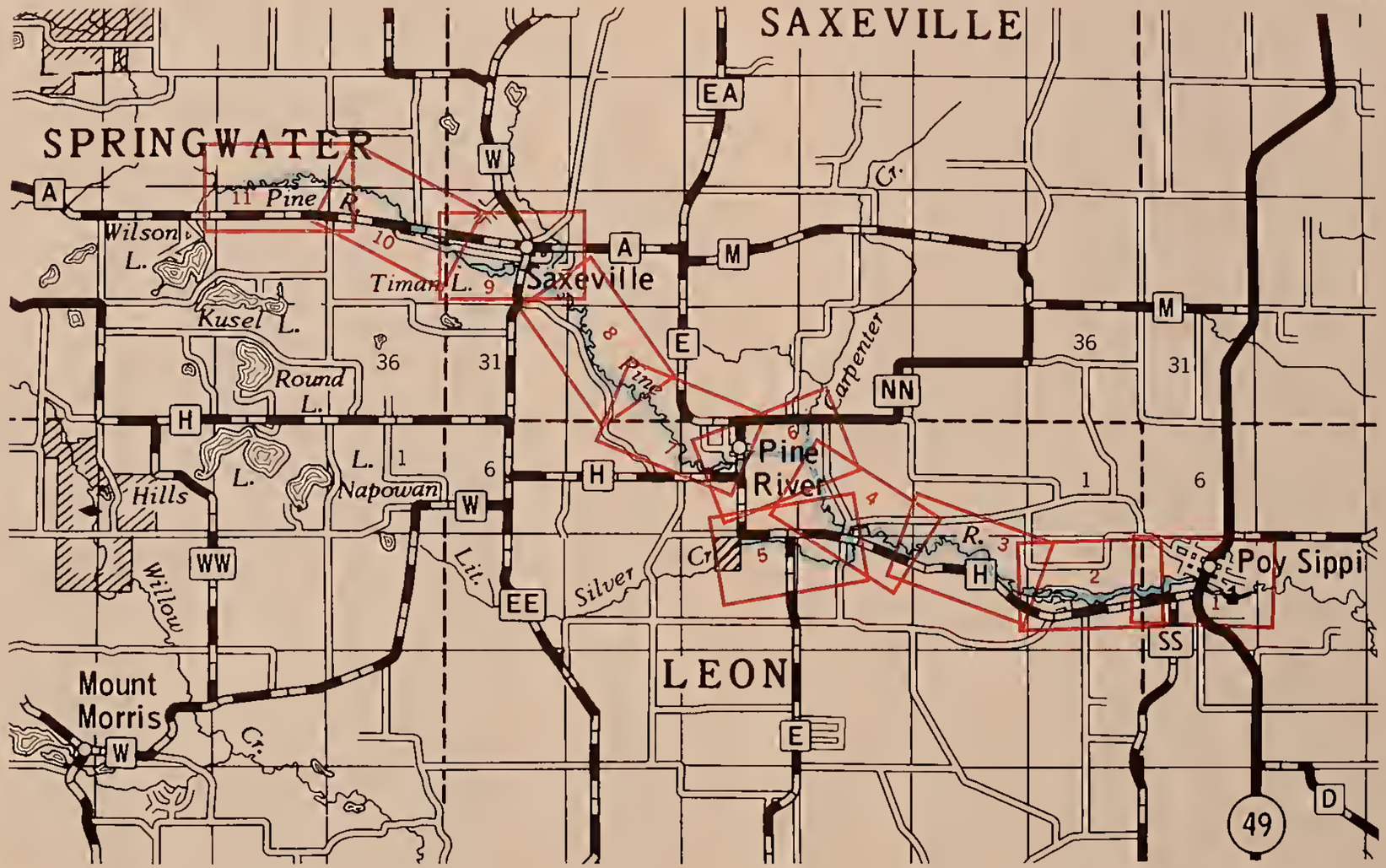
4-14-44
3-N-817

# Appendix A

# FLOOD BOUNDARY MAPS

U.S. DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE




LEGEND

- TOWN
- STATE HIGHWAY
- COUNTY HIGHWAY
- DRAINAGE
- RANGE AND TOWNSHIP LINES
- STREAM REACH STUDIED
- 1 SHEET COVERAGE

VICINITY MAP

# INDEX TO MAP SHEETS

## WAUSHARA COUNTY

## FLOOD PLAIN MANAGEMENT STUDY

WAUSHARA COUNTY, WISCONSIN

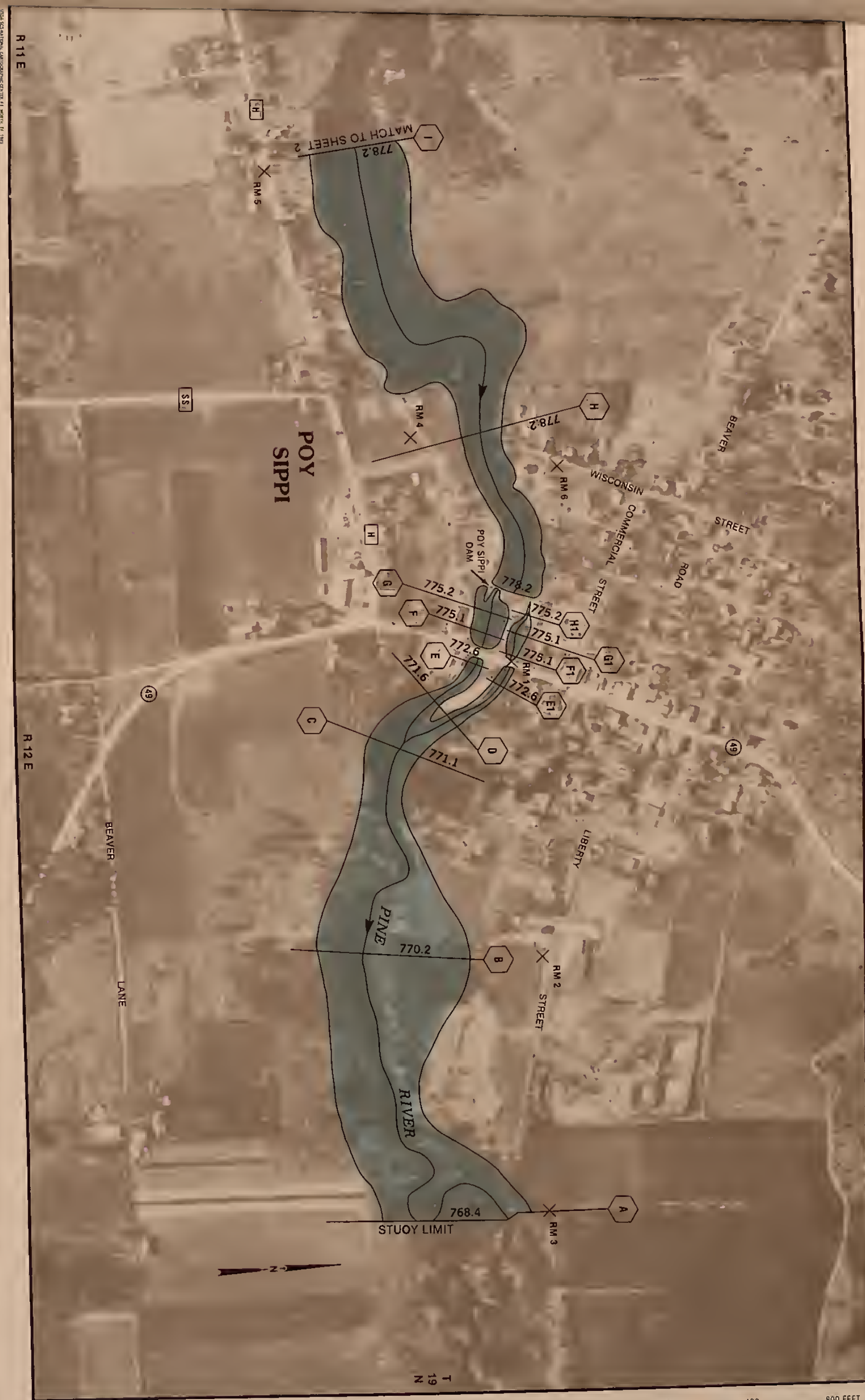
0 1 2 MILES

0 1 2 KILOMETERS

SOURCE:
BASE FROM 1984 WAUSHARA COUNTY GENERAL HIGHWAY MAP AND DATA FROM SCS FIELD PERSONNEL

DECEMBER 1988 1004120-01

USDA SCS NATIONAL CARTOGRAPHIC CENTER FT WORTH TX 1989




**LEGEND**

100 Year Flood or Breach Inundation Whichever Is Greatest.

768.4 Flood Elevation

RM 2 Reference Bench Marks

Stream Channel

Floodway Limit

A Valley Section Location

DUE TO INHERENT AERIAL PHOTOGRAPHIC DISPLACEMENT, THE PHOTOGRAPHIC IMAGE MAY VARY FROM TRUE GROUND LOCATION

SCALE 0 400 800 FEET
0 100 200 METERS
APPROXIMATE

1977 Photography

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
WAUSHARA COUNTY
FLOOD PLAIN MANAGEMENT STUDY AREA
WAUSHARA COUNTY, WISCONSIN

SHEET 1 OF 11

# FLOOD HAZARD AREA

# PINE RIVER

DECEMBER 1988 004120


**LEGEND**

- 100 Year Flood or Breach Inundation Whichever Is Greatest.
- 768.4 Flood Elevation
- RM 2 Reference Bench Marks
- Stream Channel
- Floodway Limit
- A Valley Section Location

SCALE 0 400 800 FEET; 0 100 200 METERS APPROXIMATE

DUE TO INHERENT AERIAL PHOTOGRAPHIC DISPLACEMENT, THE PHOTOGRAPHIC IMAGE MAY VARY FROM TRUE GROUND LOCATION.

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WAUSHARA COUNTY, WISCONSIN

# FLOOD HAZARD AREA

## PINE RIVER

DECEMBER 1988 1004120


**LEGEND**

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- 768.4 Flood Elevation
- RM 2 Reference Bench Marks
- Stream Channel
- Floodway Limit
- A Valley Section Location

SCALE 0 400 800 FEET; 0 100 200 METERS; APPROXIMATE

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# FLOOD HAZARD AREA

## PINE RIVER

DECEMBER 1988 1004120


**LEGEND**

100 Year Flood or Breach Inundation Whichever Is Greatest.

768.4 Flood Elevation

RM 2 Reference Bench Marks

Stream Channel

Floodway Limit

A Valley Section Location

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APPROXIMATE

1977 Photography

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# FLOOD HAZARD AREA

# PINE RIVER

SHEET 4 OF 11

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**LEGEND**

- 100 Year Flood or Breach Inundation Whichever Is Greatest.
- 768.4 Flood Elevation
- RM 2 Reference Bench Marks
- Stream Channel
- Floodway Limit
- A Valley Section Location

SCALE 0 400 800 FEET; 0 100 200 METERS APPROXIMATE

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WAUSHARA COUNTY, WISCONSIN

SHEET 5 OF 11

# FLOOD HAZARD AREA

# LITTLE SILVER CREEK

DECEMBER 1988 1004120


## LEGEND

100 Year Flood or Breach Inundation Whichever Is Greatest.

768.4 Flood Elevation

RM 2 Reference Bench Marks

Stream Channel

Floodway Limit

A Valley Section Location

DUE TO INHERENT AERIAL PHOTOGRAPHIC DISPLACEMENT, THE PHOTOGRAPHIC IMAGE MAY VARY FROM TRUE GROUND LOCATION

SCALE 0 400 800 FEET
0 100 200 METERS
APPROXIMATE

1977 Photography

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WAUSHARA COUNTY
FLOOD PLAIN MANAGEMENT STUDY AREA
WAUSHARA COUNTY, WISCONSIN

SHEET 6 OF 11

# FLOOD HAZARD AREA

# PINE RIVER AND CARPENTER CREEK

DECEMBER 1988 | 004120


**LEGEND**

- 100 Year Flood or Breach Inundation Whichever Is Greatest.
- 768.4 Flood Elevation
- RM 2 Reference Bench Marks
- Stream Channel
- Floodway Limit
- A Valley Section Location

SCALE 0 400 800 FEET; 0 100 200 METERS APPROXIMATE

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WAUSHARA COUNTY, WISCONSIN

SHEET 7 OF 11

# FLOOD HAZARD AREA

# PINE RIVER

DECEMBER 1988 1004120


**LEGEND**

100 Year Flood or Breach Inundation Whichever Is Greatest.

768.4 Flood Elevation

RM 2 Reference Bench Marks

Stream Channel

Floodway Limit

A Valley Section Location

DUE TO INHERENT AERIAL PHOTOGRAPHIC DISPLACEMENT, THE PHOTOGRAPHIC IMAGE MAY VARY FROM TRUE GROUND LOCATION

SCALE 0 400 800 FEET
0 100 200 METERS
APPROXIMATE

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WAUSHARA COUNTY
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WAUSHARA COUNTY, WISCONSIN

# FLOOD HAZARD AREA

## PINE RIVER

SHEET 8 OF 11

DECEMBER 1988 1004120


**LEGEND**

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- 768.4 Flood Elevation
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- Stream Channel
- Floodway Limit
- A Valley Section Location

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SCALE 0 400 800 FEET; 0 100 200 METERS APPROXIMATE

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WAUSHARA COUNTY, WISCONSIN

SHEET 9 OF 11

# FLOOD HAZARD AREA

## PINE RIVER AND POPPLE CREEK

DECEMBER 1988 1004120

MATCH TO SHEET 11

23 24 26 25

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RM 44

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MATCH TO SHEET 9

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T 20 N

## LEGEND

100 Year Flood or Breach Inundation Whichever Is Greatest.

768.4 Flood Elevation

RM 2 Reference Bench Marks

Stream Channel

Floodway Limit

A Valley Section Location

DUE TO INHERENT AERIAL PHOTOGRAPHIC DISPLACEMENT, THE PHOTOGRAPHIC IMAGE MAY VARY FROM TRUE GROUND LOCATION

SCALE 0 400 800 FEET

0 100 200 METERS

APPROXIMATE

1977 Photography

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WAUSHARA COUNTY, WISCONSIN

# FLOOD HAZARD AREA

# PINE RIVER

SHEET 10 OF 11

DECEMBER 1988 1004120


LEGEND

100 Year Flood or Breach Inundation Whichever Is Greatest.

768.4 Flood Elevation

RM 2 Reference Bench Marks

Stream Channel

Floodway Limit

A Valley Section Location

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0 100 200 METERS
APPROXIMATE

1977 Photography

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WAUSHARA COUNTY, WISCONSIN

SHEET 11 OF 11

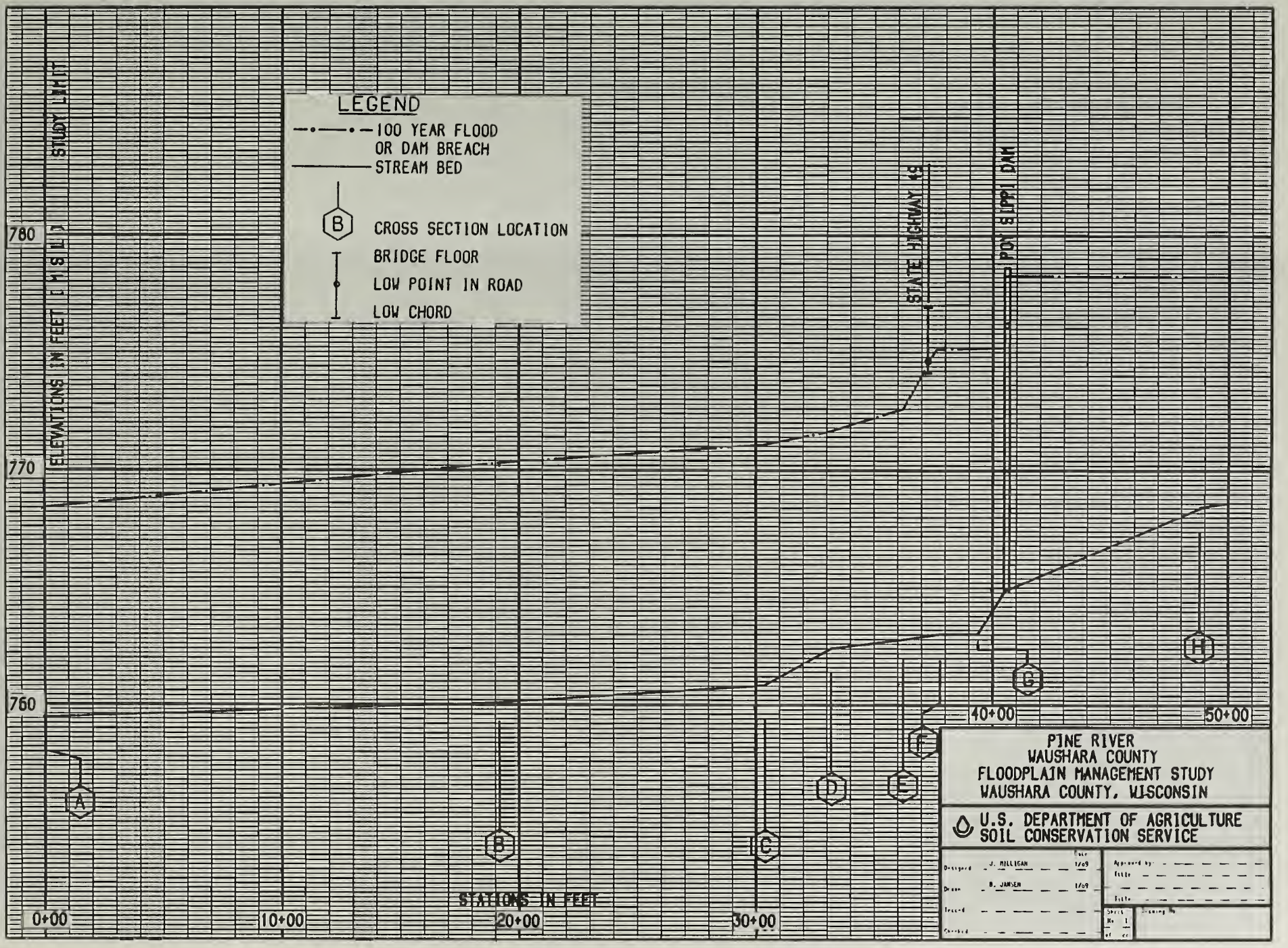
# FLOOD HAZARD AREA

## PINE RIVER

DECEMBER 1988 1004120

# Appendix B

# FLOOD PROFILES


LEGEND
100 YEAR FLOOD OR DAM BREACH
STREAM BED
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LOW POINT IN ROAD
LOW CHORD
STUDY LIMIT
STATE HIGHWAY 49
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PINE RIVER
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Designed J. MILLIGAN 1/89
Drawn B. JANSEN 1/89
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Approved by
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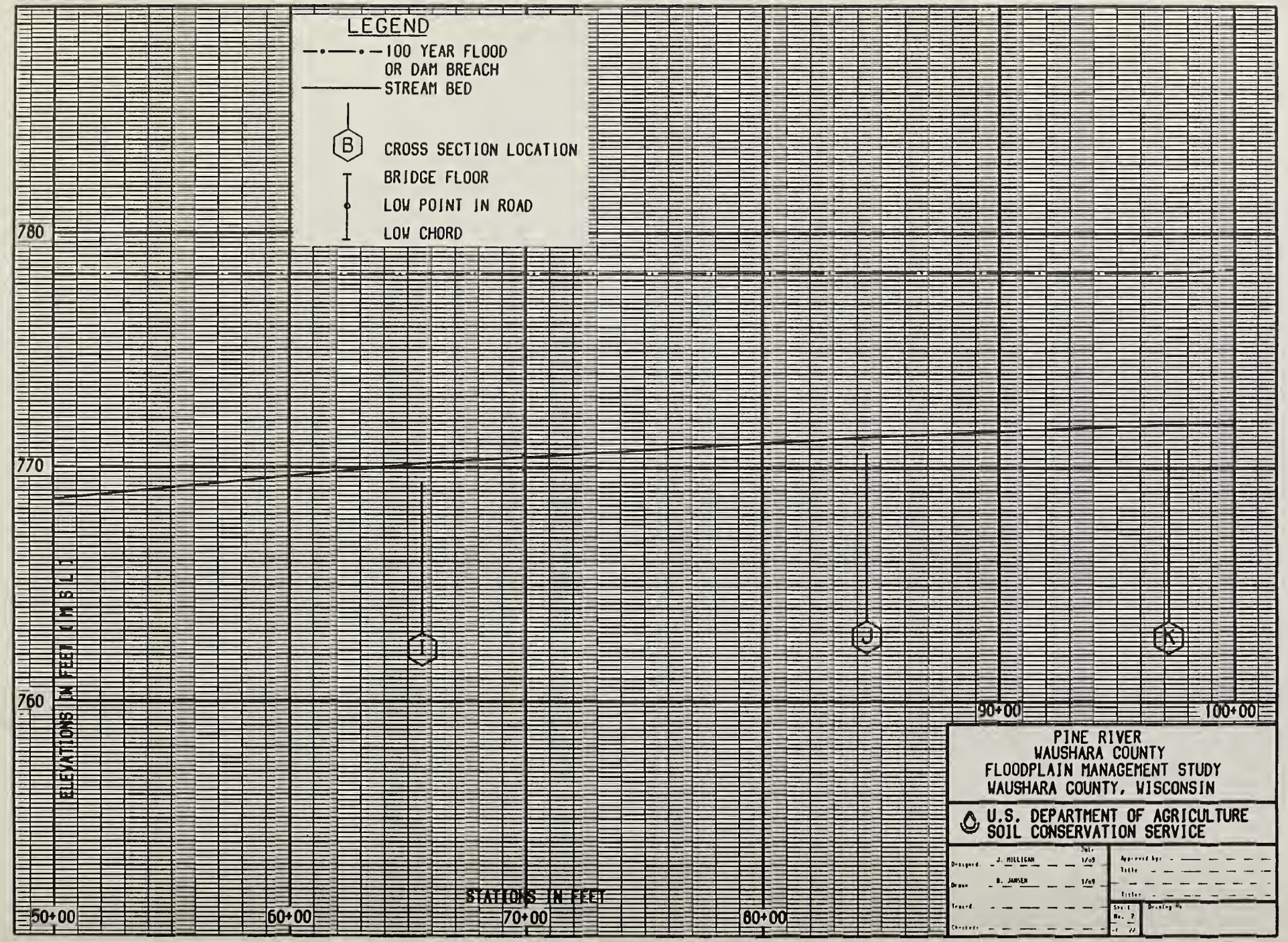
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STATIONS IN FEET
PINE RIVER
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN
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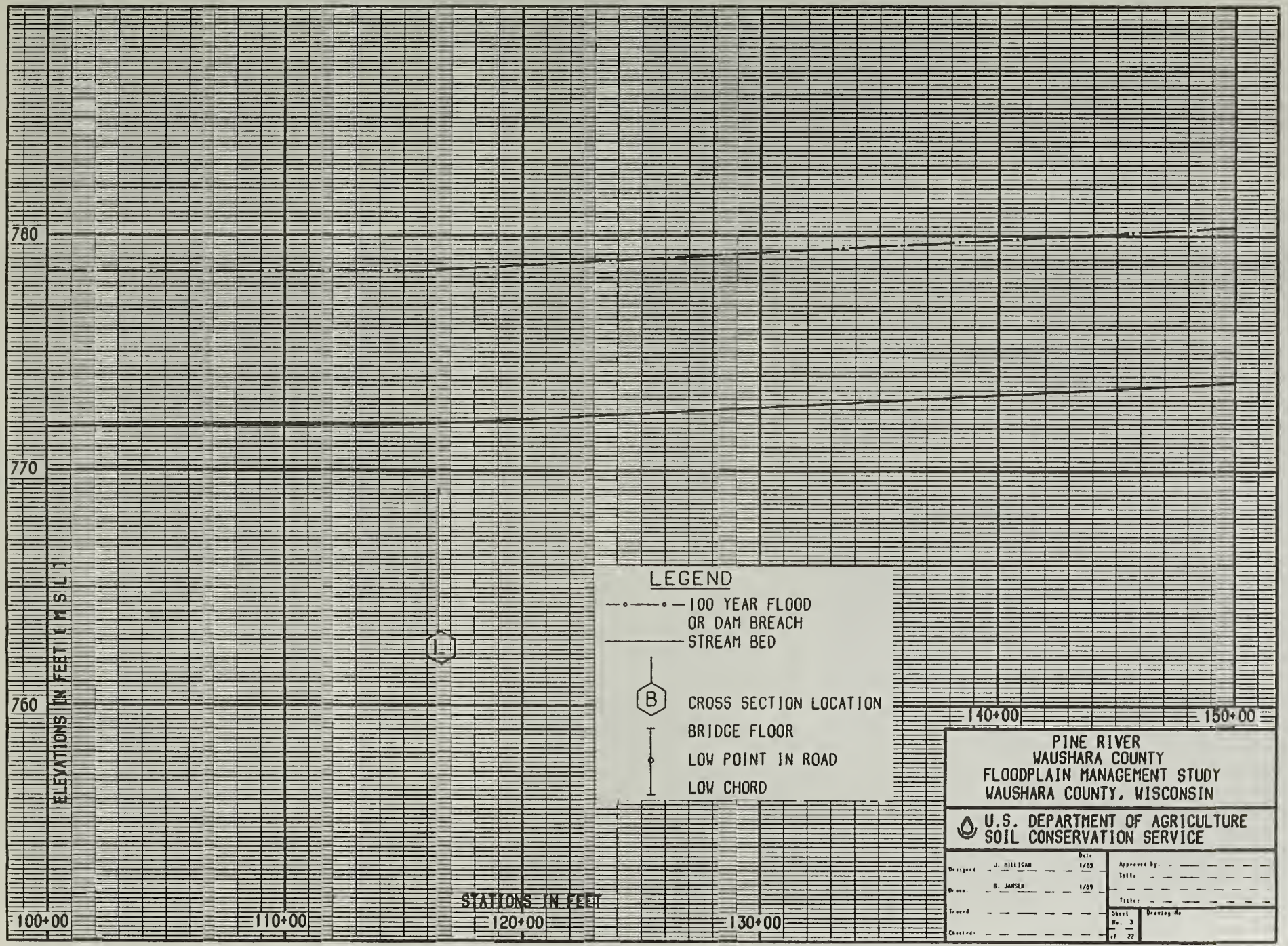
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PINE RIVER
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
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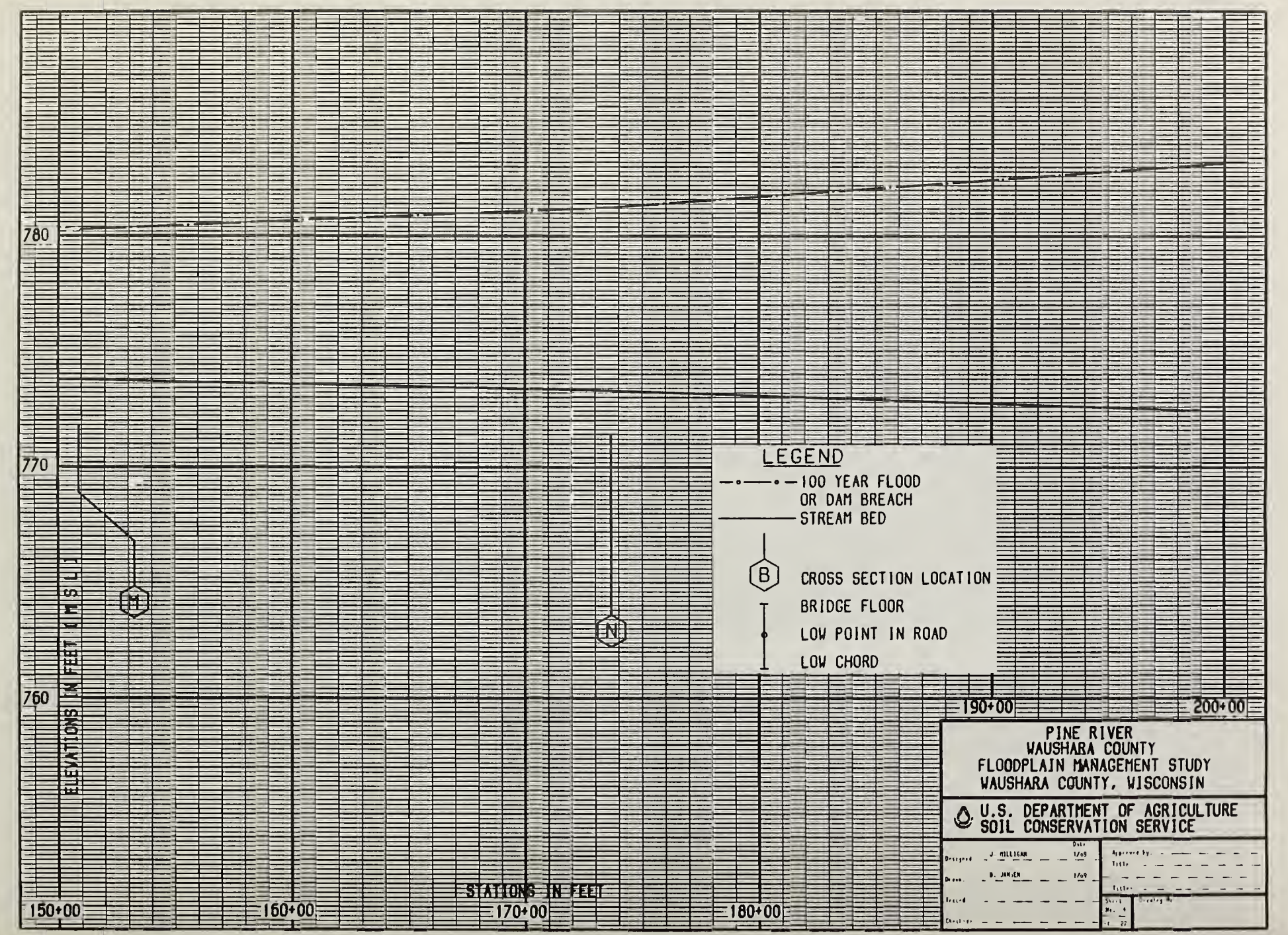
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CROSS SECTION LOCATION
BRIDGE FLOOR
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STATIONS IN FEET
PINE RIVER
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN
U.S. DEPARTMENT OF AGRICULTURE
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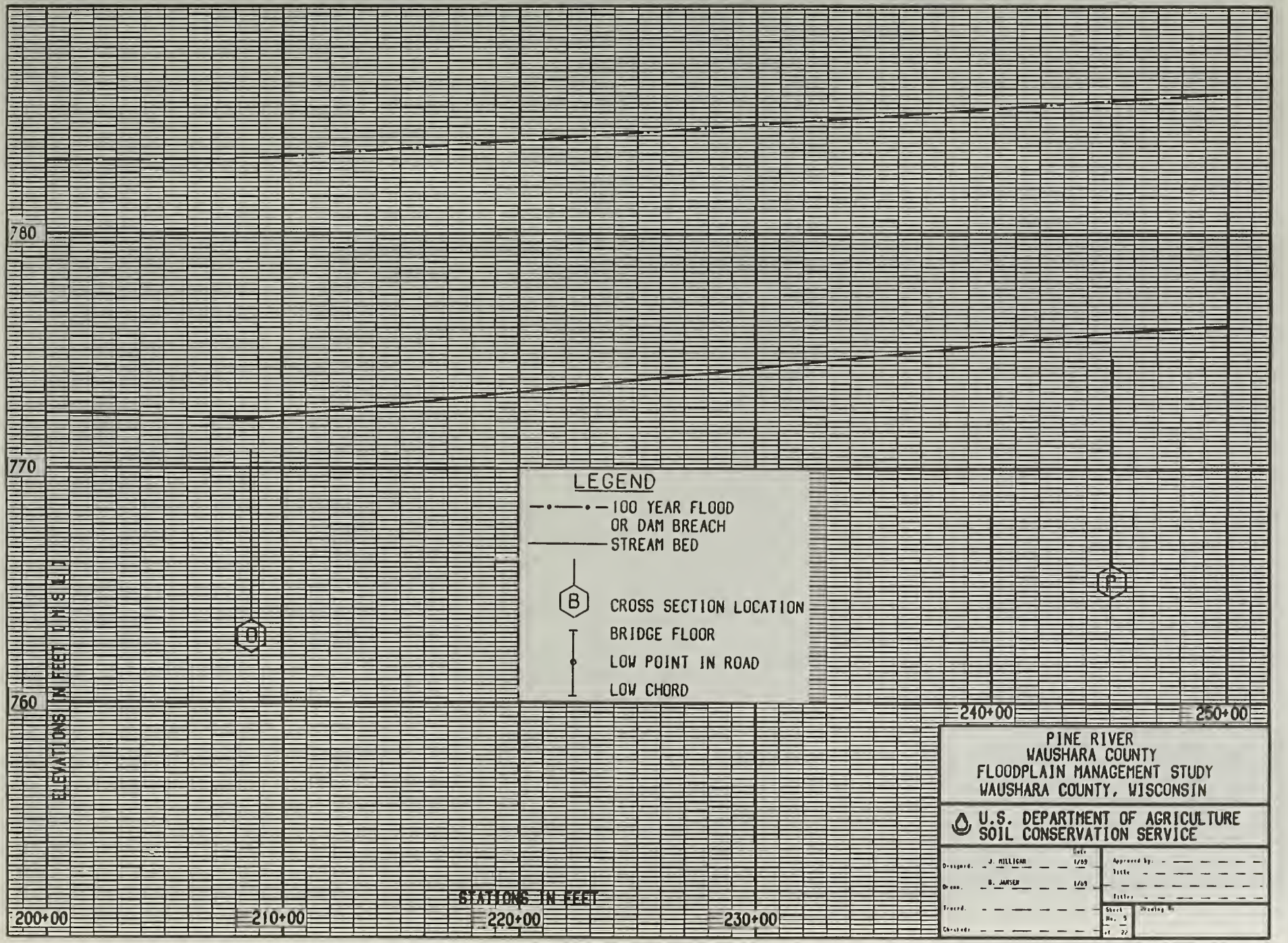
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STATIONS IN FEET
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LEGEND
100 YEAR FLOOD OR DAM BREACH
STREAM BED
CROSS SECTION LOCATION
BRIDGE FLOOR
LOW POINT IN ROAD
LOW CHORD
PINE RIVER
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
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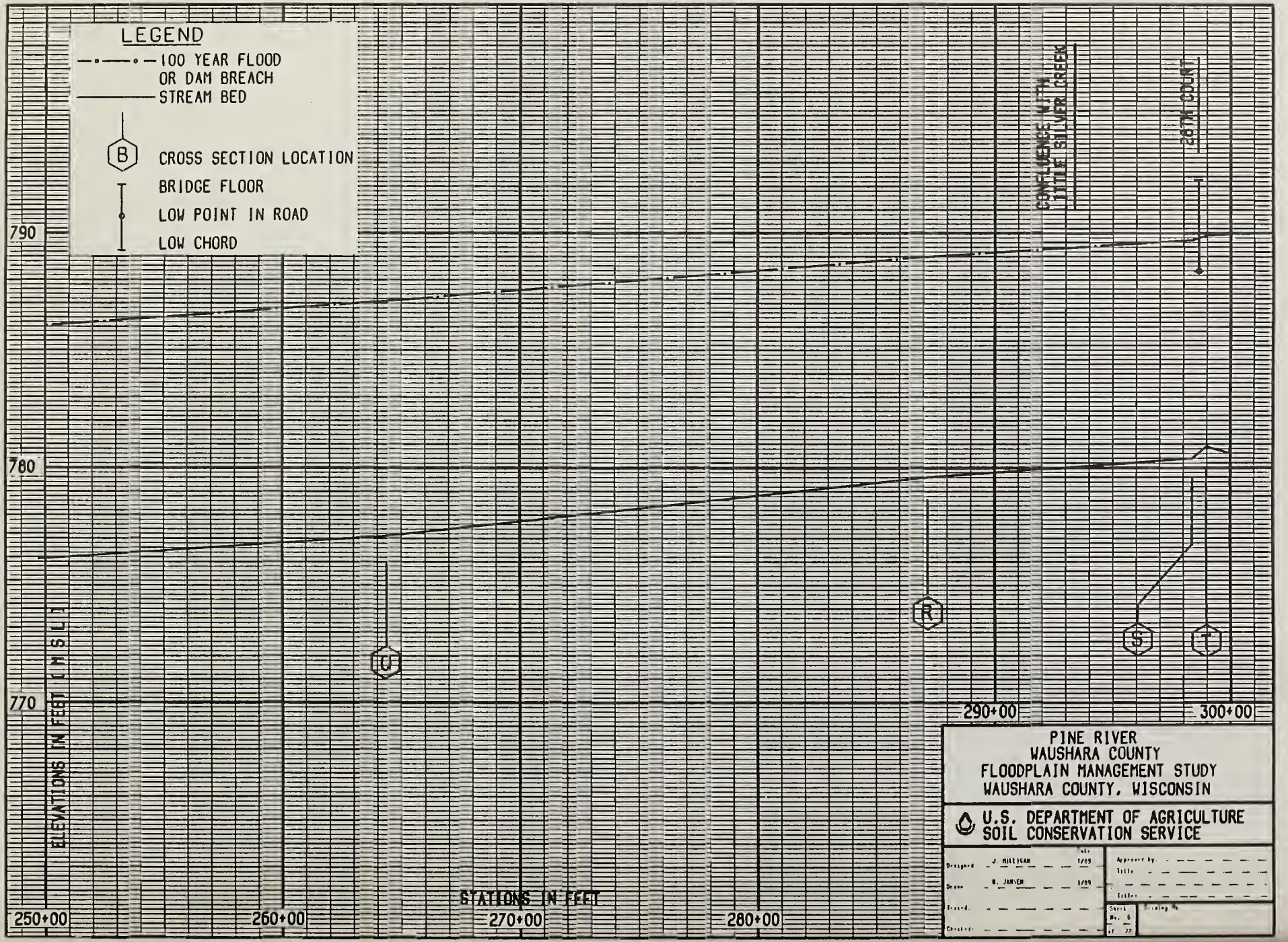
LEGEND
100 YEAR FLOOD OR DAM BREACH
STREAM BED
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CROSS SECTION LOCATION
BRIDGE FLOOR
LOW POINT IN ROAD
LOW CHORD
CONFLUENCE WITH LITTLE SILVER CREEK
28TH COURT
790
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ELEVATIONS IN FEET (MSL)
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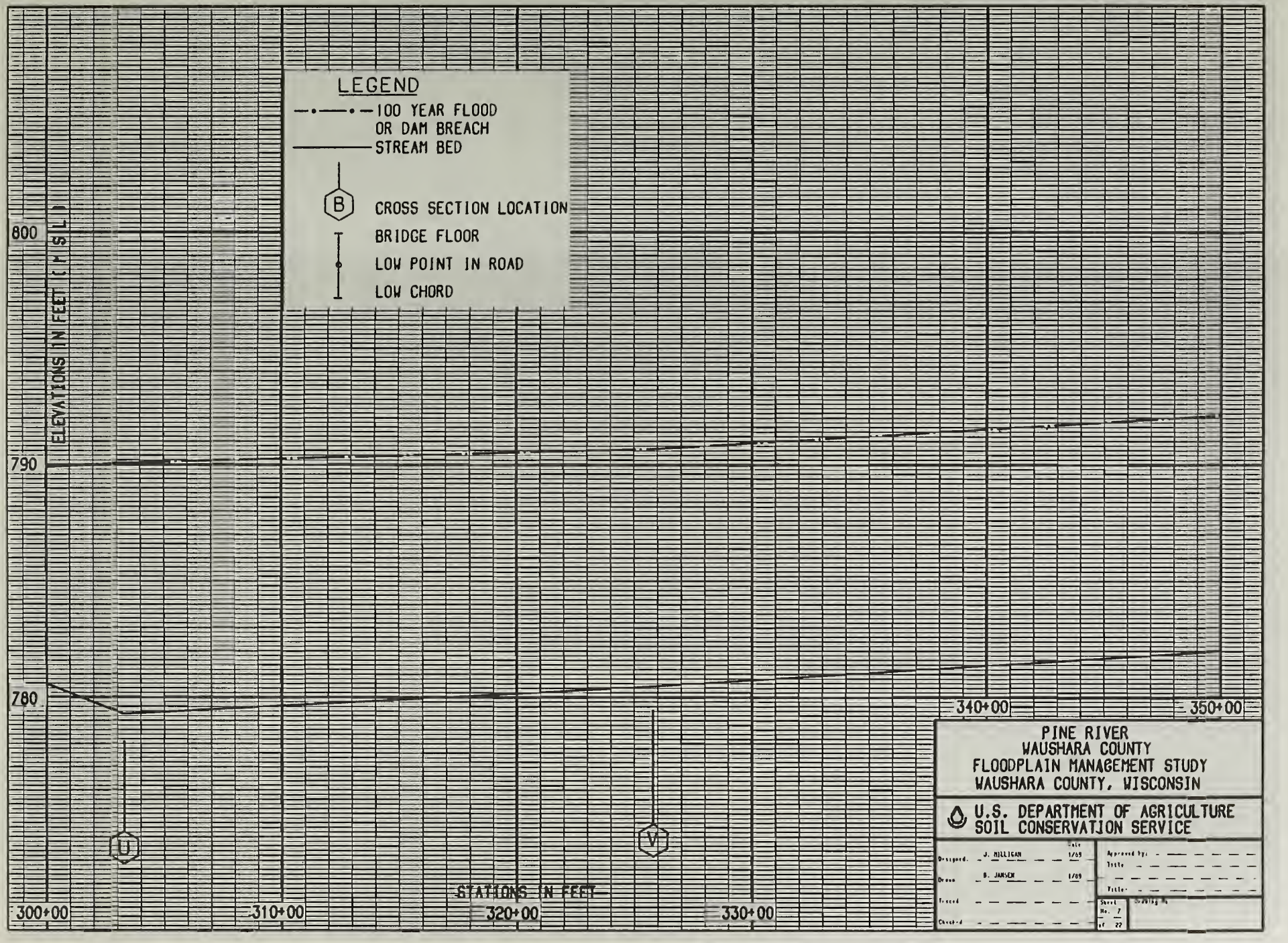
270+00
280+00
290+00
300+00
STATIONS IN FEET
PINE RIVER
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Designed J. MILLIGAN 1/89
Drawn B. JANSEN 1/89
Traced
Checked
Approved by
Title
Date
Sheet No. 6 of 22
Drawing No.


LEGEND
100 YEAR FLOOD OR DAM BREACH
STREAM BED
B
CROSS SECTION LOCATION
BRIDGE FLOOR
LOW POINT IN ROAD
LOW CHORD
ELEVATIONS IN FEET (MSL)
800
790
780
U
V
300+00
310+00
320+00
330+00
340+00
350+00
STATIONS IN FEET
PINE RIVER
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Designed J. HILLIGAN 1/89
Drawn B. JANSEN 1/89
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Checked
Approved by:
Title
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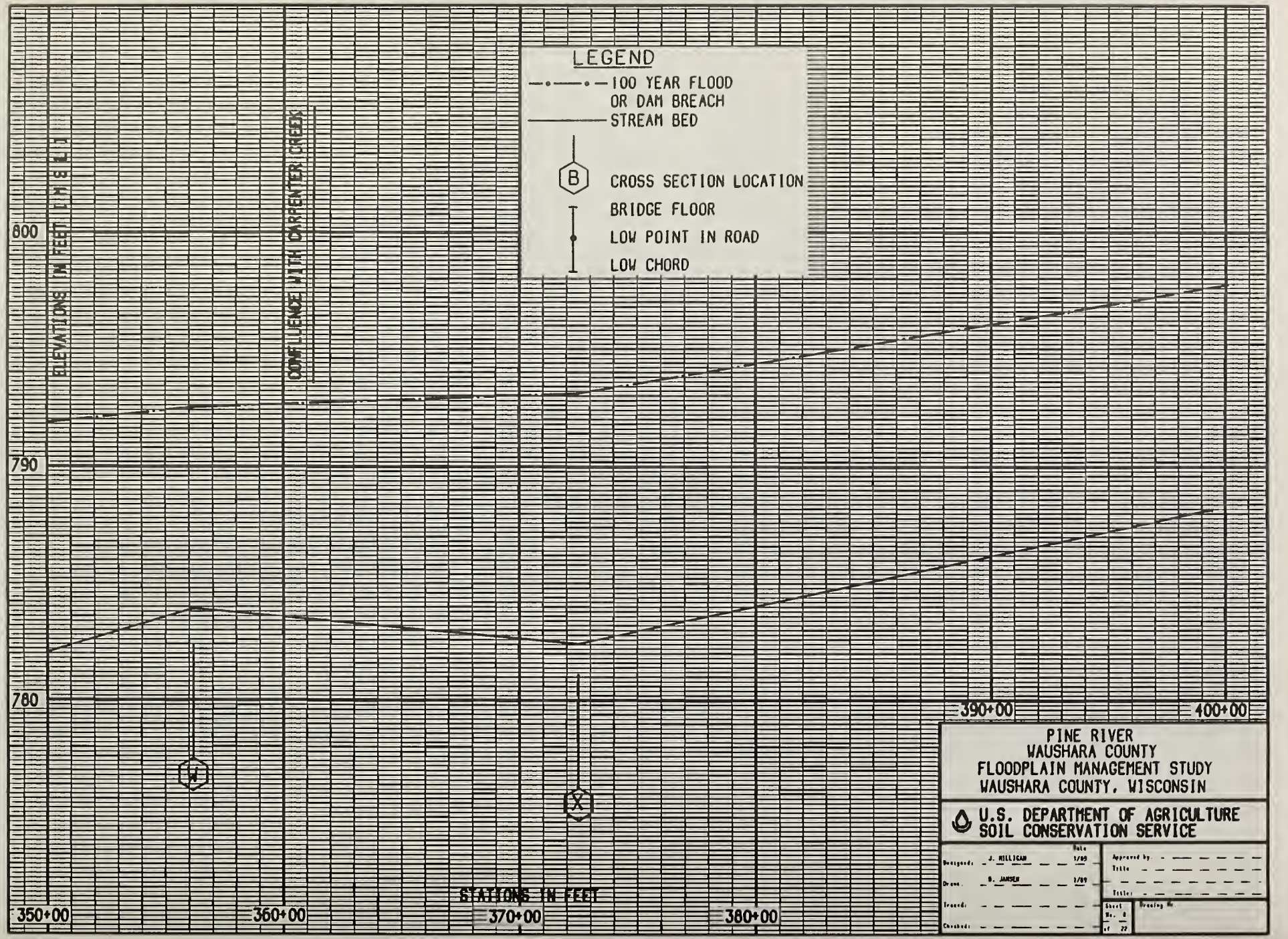
Sheet No. 7 of 22
Drawing No.


LEGEND
100 YEAR FLOOD OR DAM BREACH
STREAM BED
B
CROSS SECTION LOCATION
BRIDGE FLOOR
LOW POINT IN ROAD
LOW CHORD
ELEVATIONS IN FEET (M S L)
CONFLUENCE WITH CARPENTER CREEK
800
790
780
W
X
350+00
360+00
370+00
380+00
390+00
400+00
STATIONS IN FEET
PINE RIVER
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Designed: J. MILLIGAN 1/89
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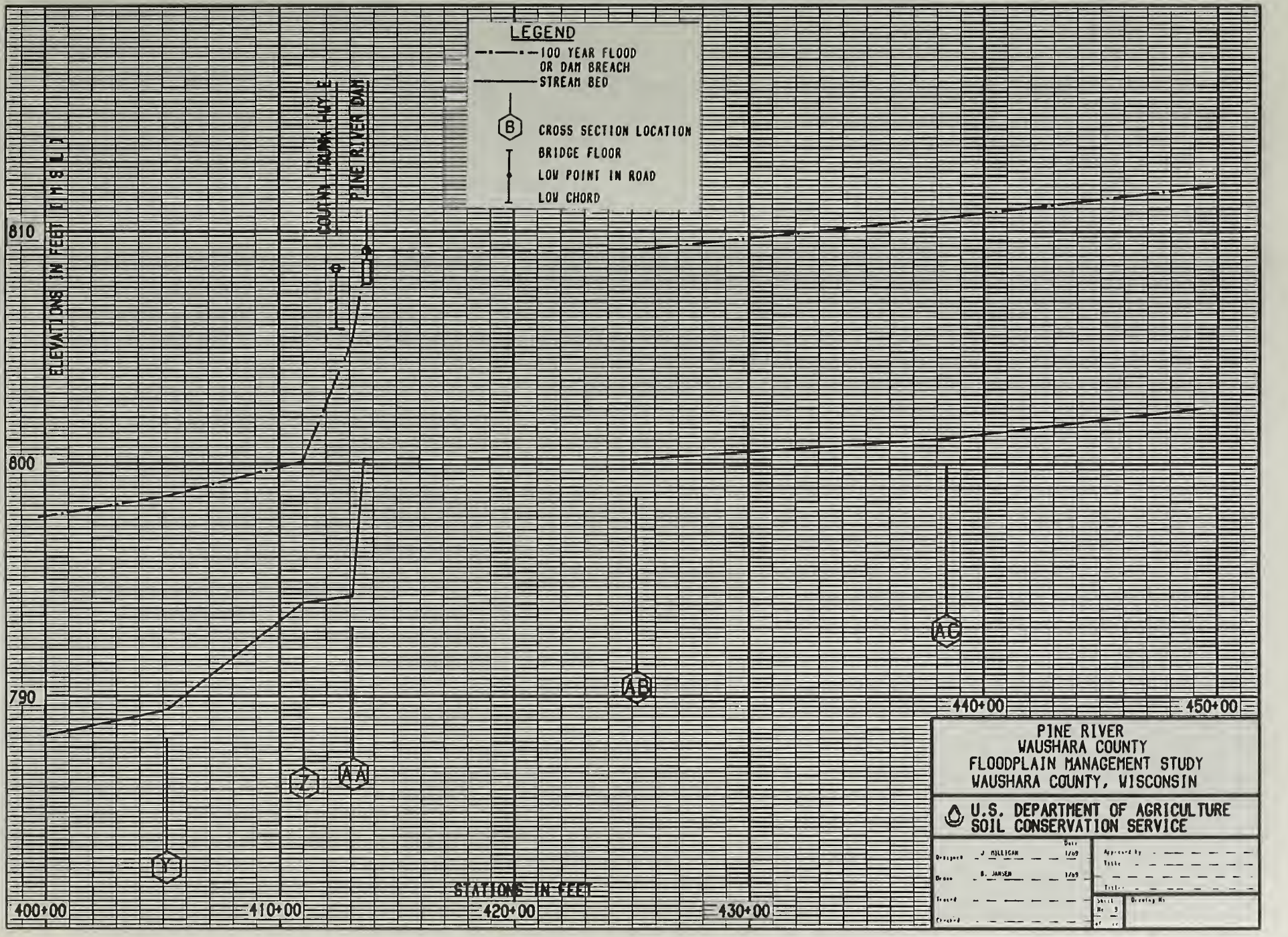
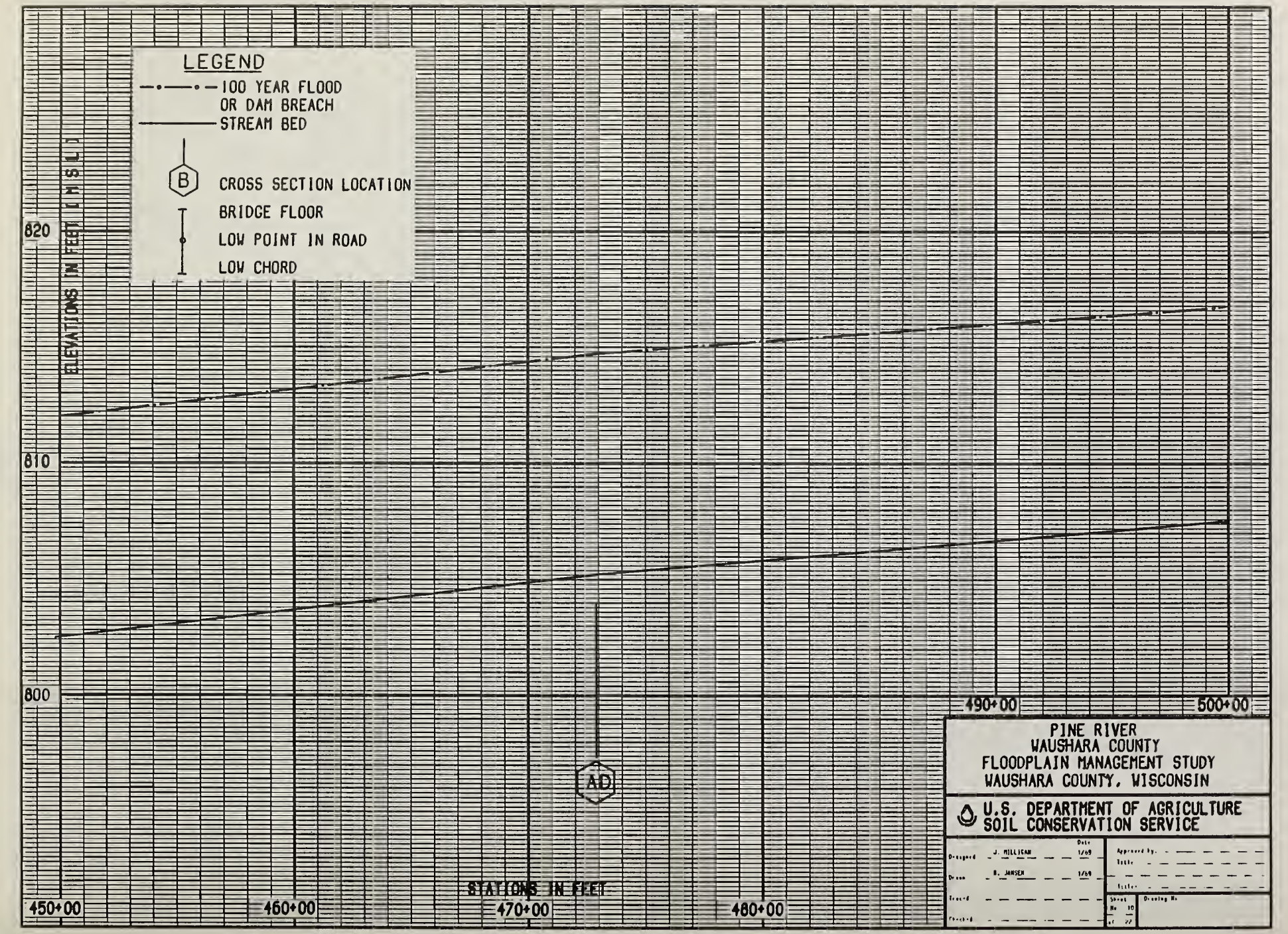
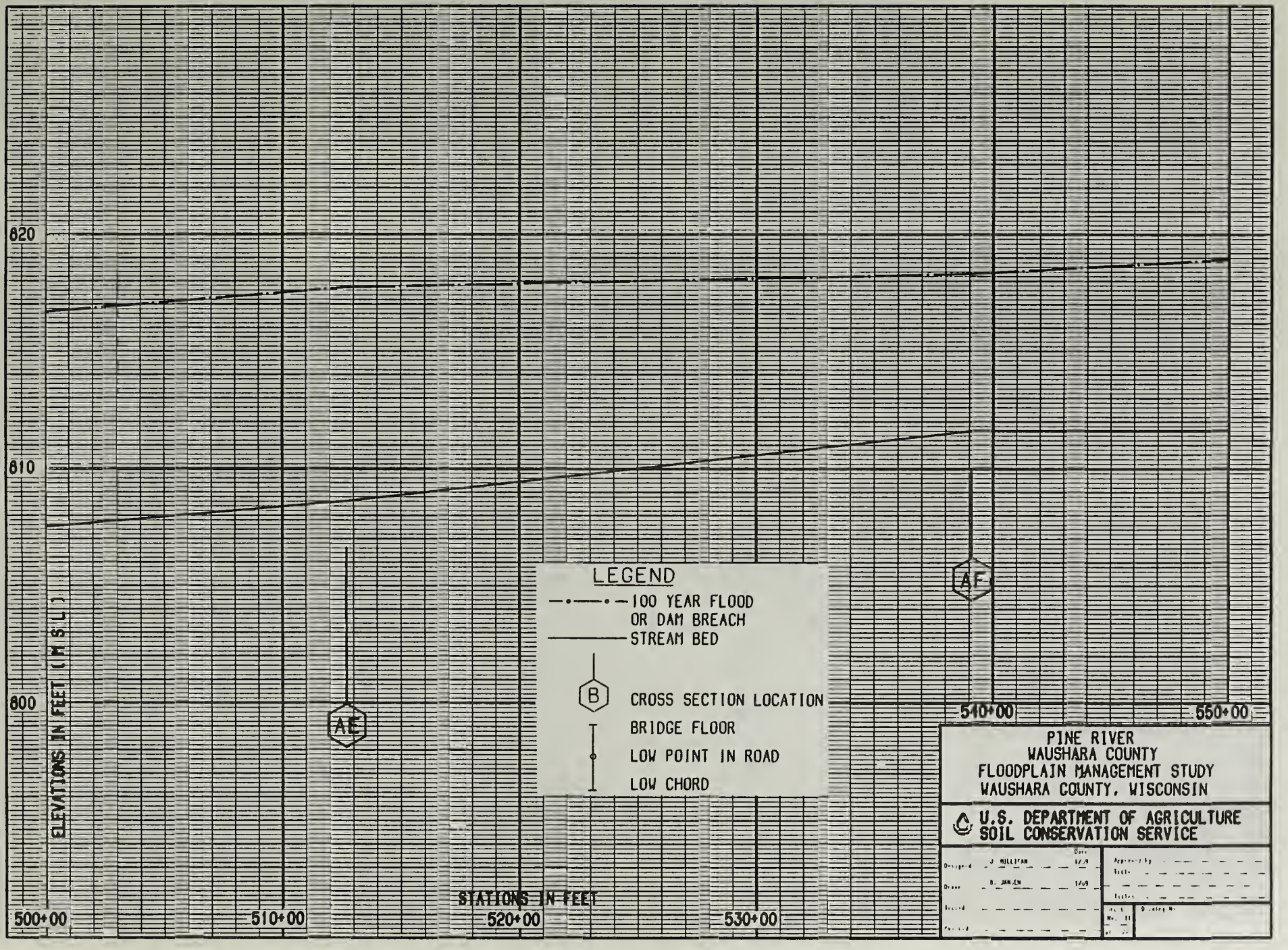
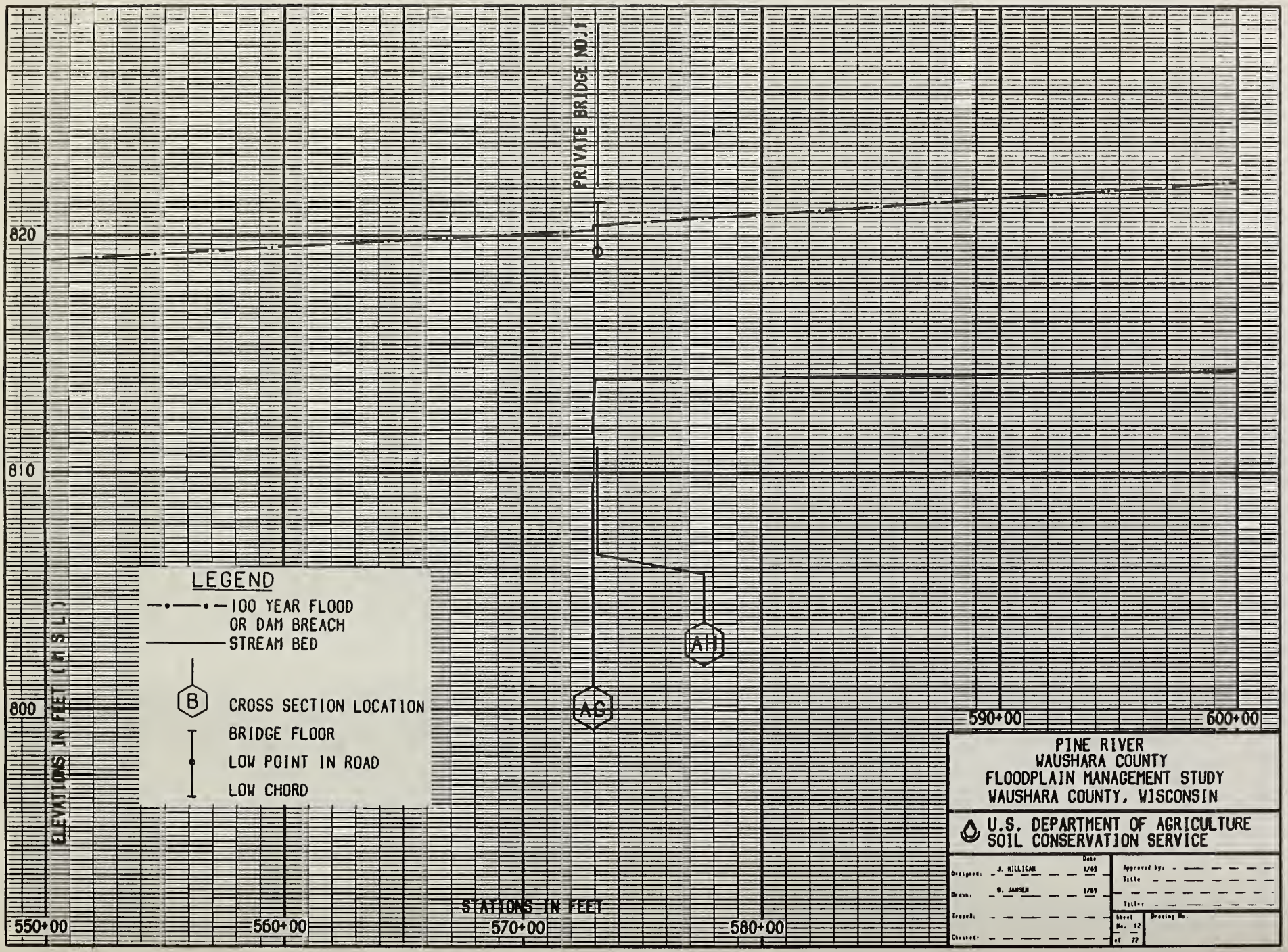
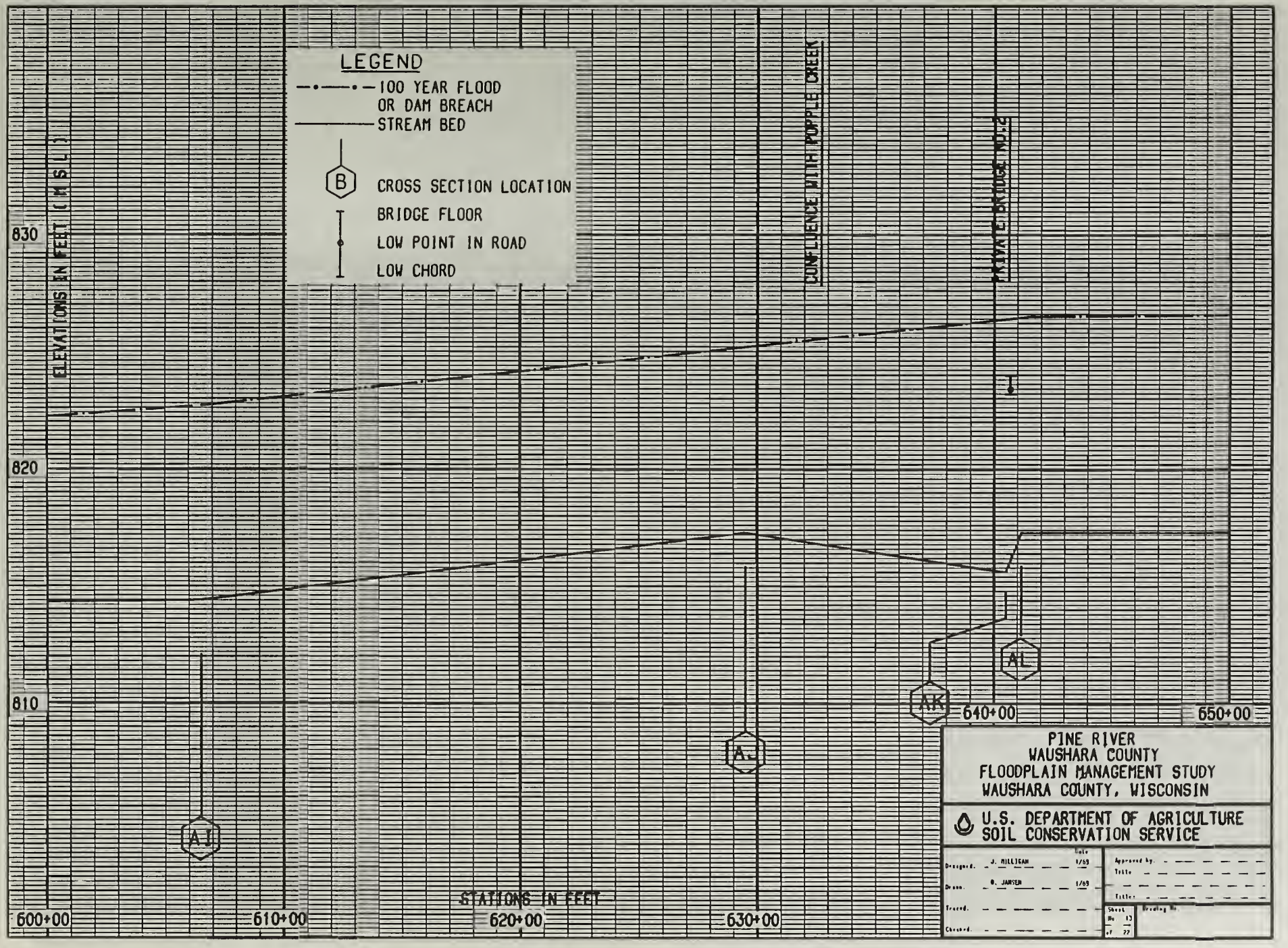
Title:
Sheet No. 8 of 22
Drawing No.

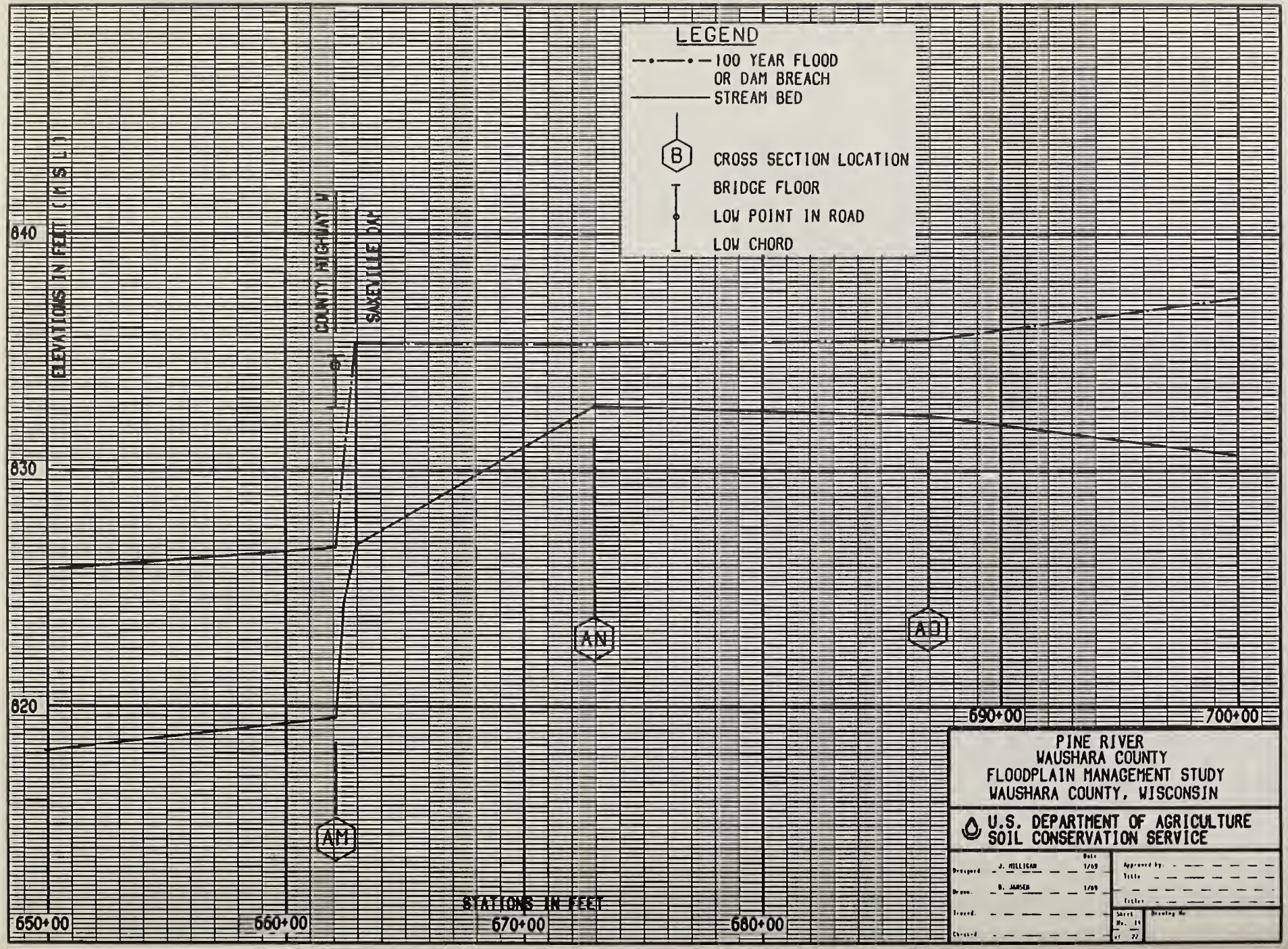

LEGEND
100 YEAR FLOOD OR DAM BREACH
STREAM BED
CROSS SECTION LOCATION
BRIDGE FLOOR
LOW POINT IN ROAD
LOW CHORD
SOUTH TRUNK HWY E
PINE RIVER DAM
ELEVATIONS IN FEET (M S L)
810
800
790
400+00
410+00
420+00
430+00
440+00
450+00
STATIONS IN FEET
Y
Z
AA
AB
AC
PINE RIVER
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Designed J. MILLIGAN 1/69
Drawn B. JANSEN 1/69
Traced
Checked
Approved by
Title
Title
Sheet No. 9 of
Drawing No.

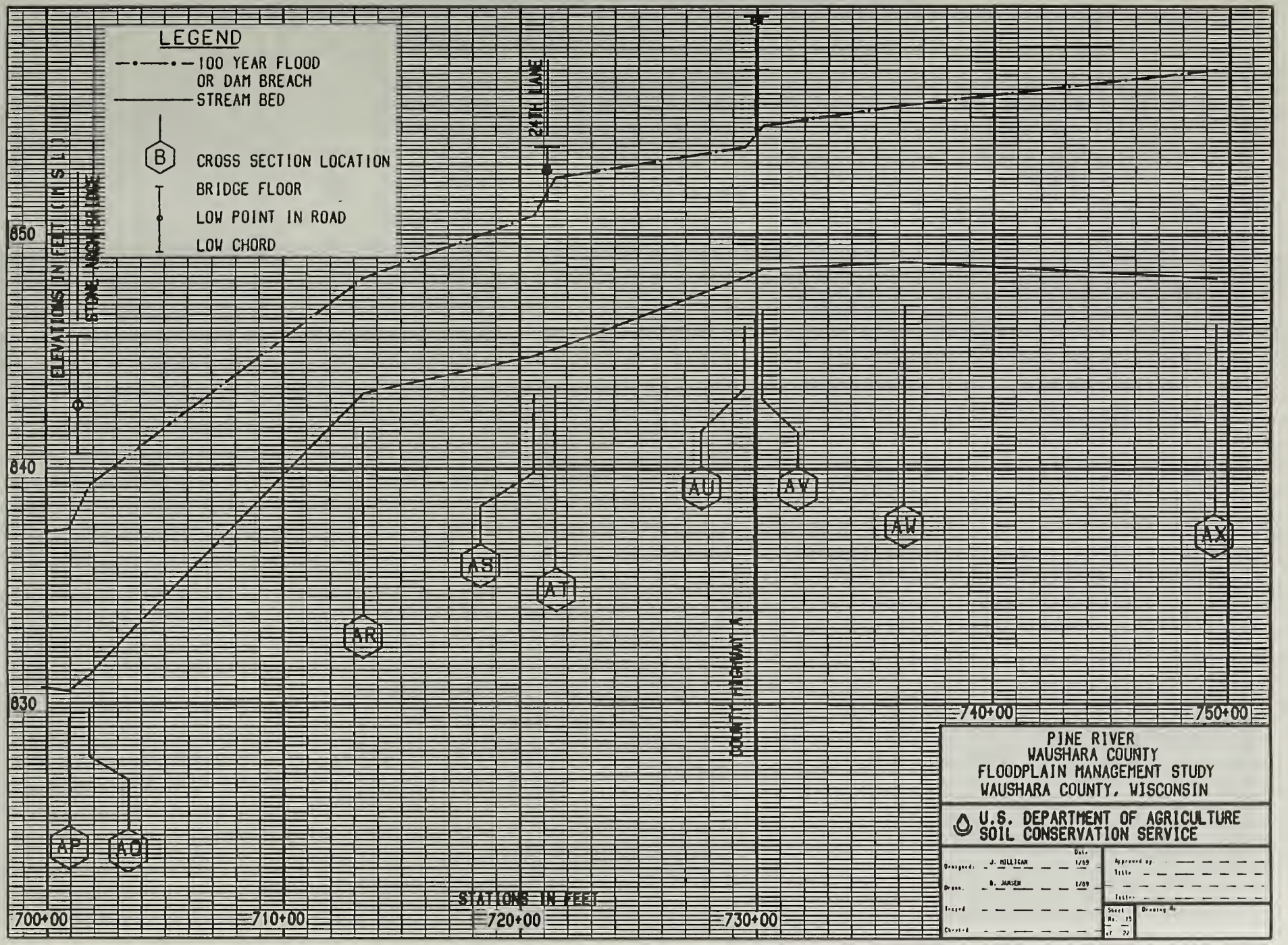

LEGEND
100 YEAR FLOOD OR DAM BREACH
STREAM BED
B
CROSS SECTION LOCATION
BRIDGE FLOOR
LOW POINT IN ROAD
LOW CHORD
ELEVATIONS IN FEET (MSL)
820
810
800
AD
450+00
460+00
470+00
480+00
490+00
500+00
STATIONS IN FEET
PINE RIVER
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Designed J. MILLIGAN 1/69
Drawn B. JANSEN 1/69
Traced
Checked
Approved By
Title
Sheet No 10 of 22
Drawing No

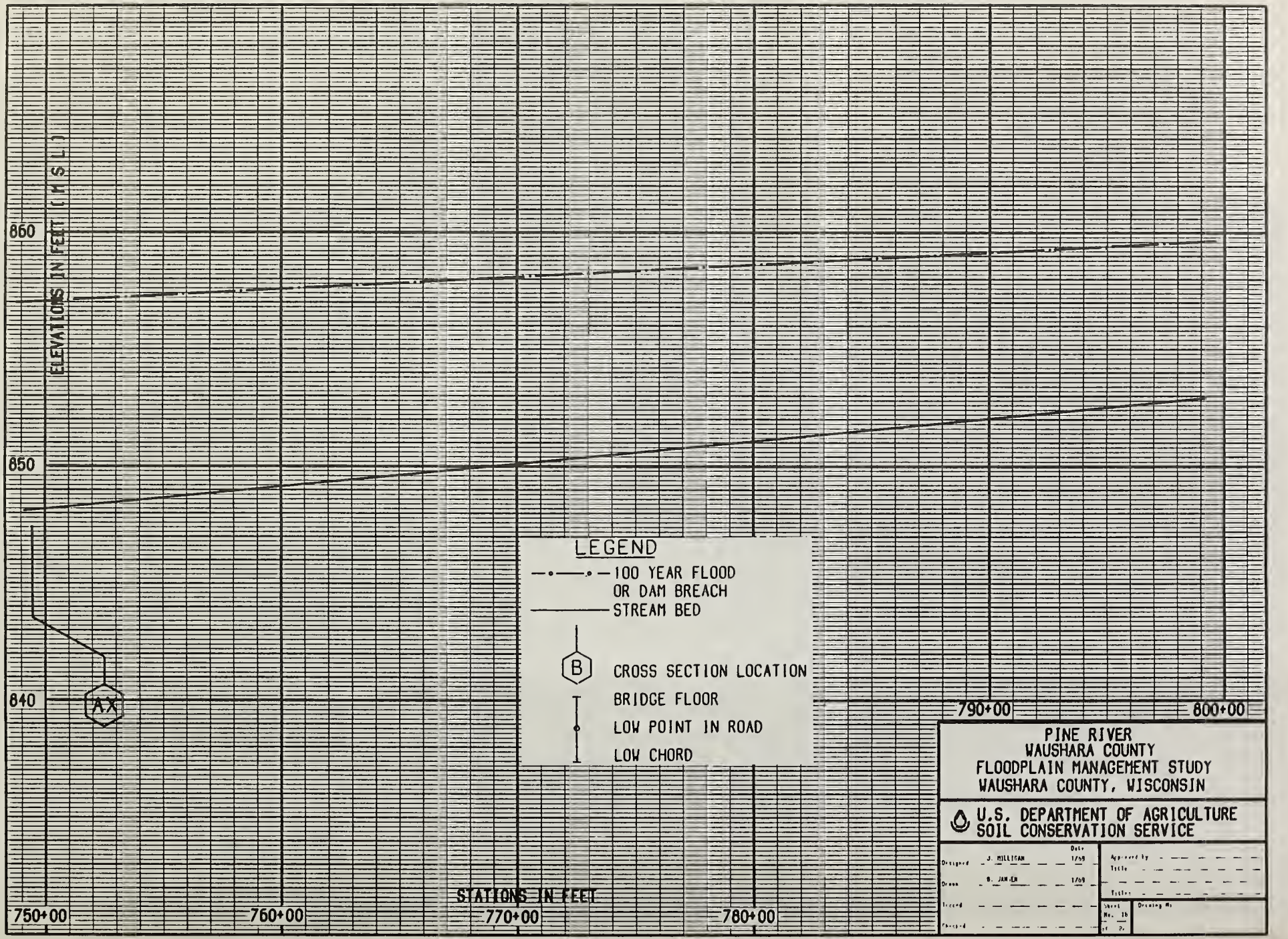

620
610
600
ELEVATIONS IN FEET (M.S.L.)
500+00
510+00
520+00
530+00
540+00
550+00
STATIONS IN FEET
AE
AF
LEGEND
100 YEAR FLOOD OR DAM BREACH
STREAM BED
B
CROSS SECTION LOCATION
BRIDGE FLOOR
LOW POINT IN ROAD
LOW CHORD
PINE RIVER
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

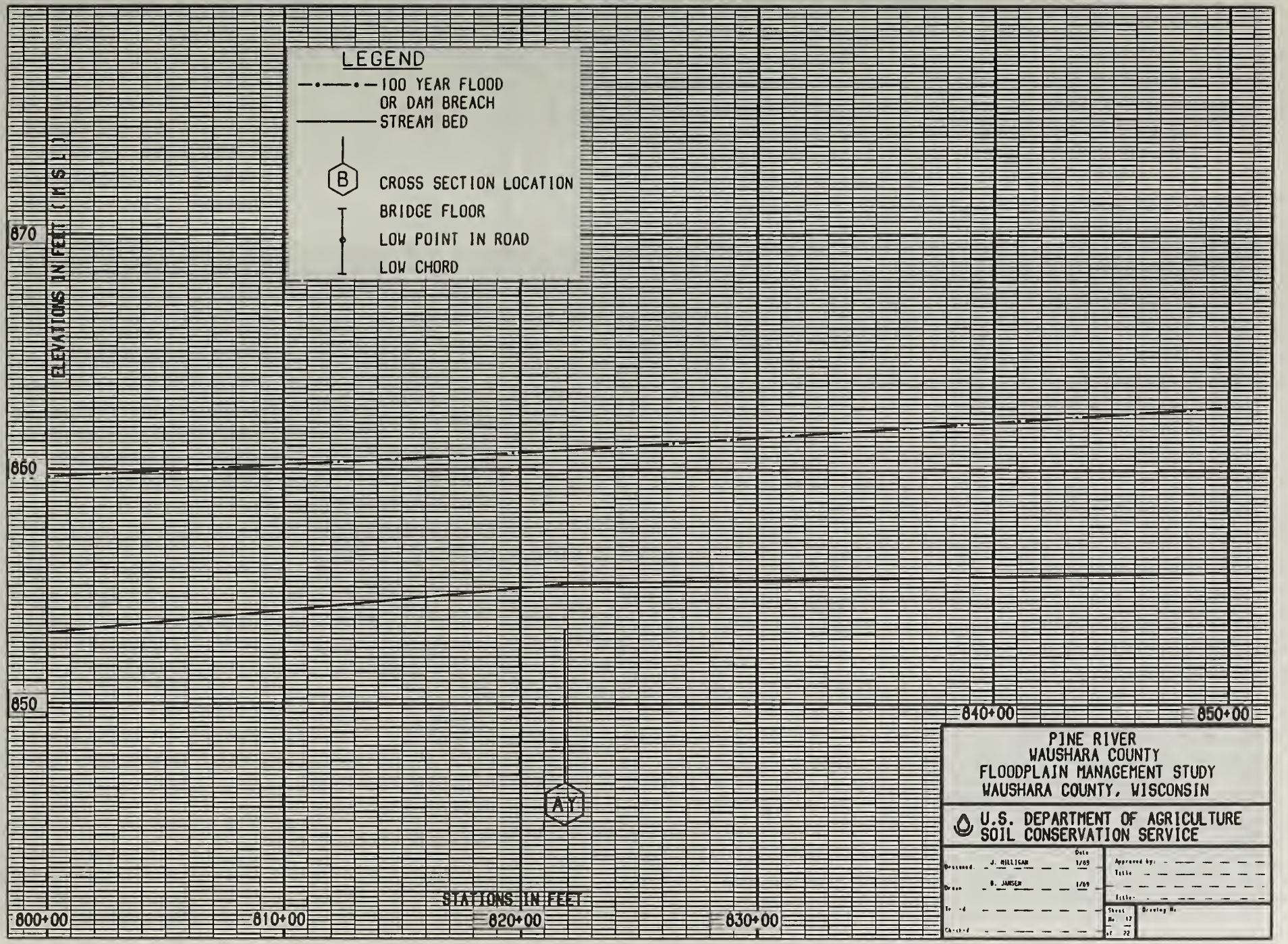

PRIVATE BRIDGE NO.1
820
810
800
ELEVATIONS IN FEET (M S L)
LEGEND
100 YEAR FLOOD OR DAM BREACH
STREAM BED
B
CROSS SECTION LOCATION
BRIDGE FLOOR
LOW POINT IN ROAD
LOW CHORD
AG
AH
550+00
560+00
570+00
580+00
590+00
600+00
STATIONS IN FEET
PINE RIVER
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Designed: J. HILLIGAN 1/89
Drawn: B. JANSEN 1/89
Traced:
Checked:
Approved by:
Title
Sheet No. 12 of 22
Drawing No.

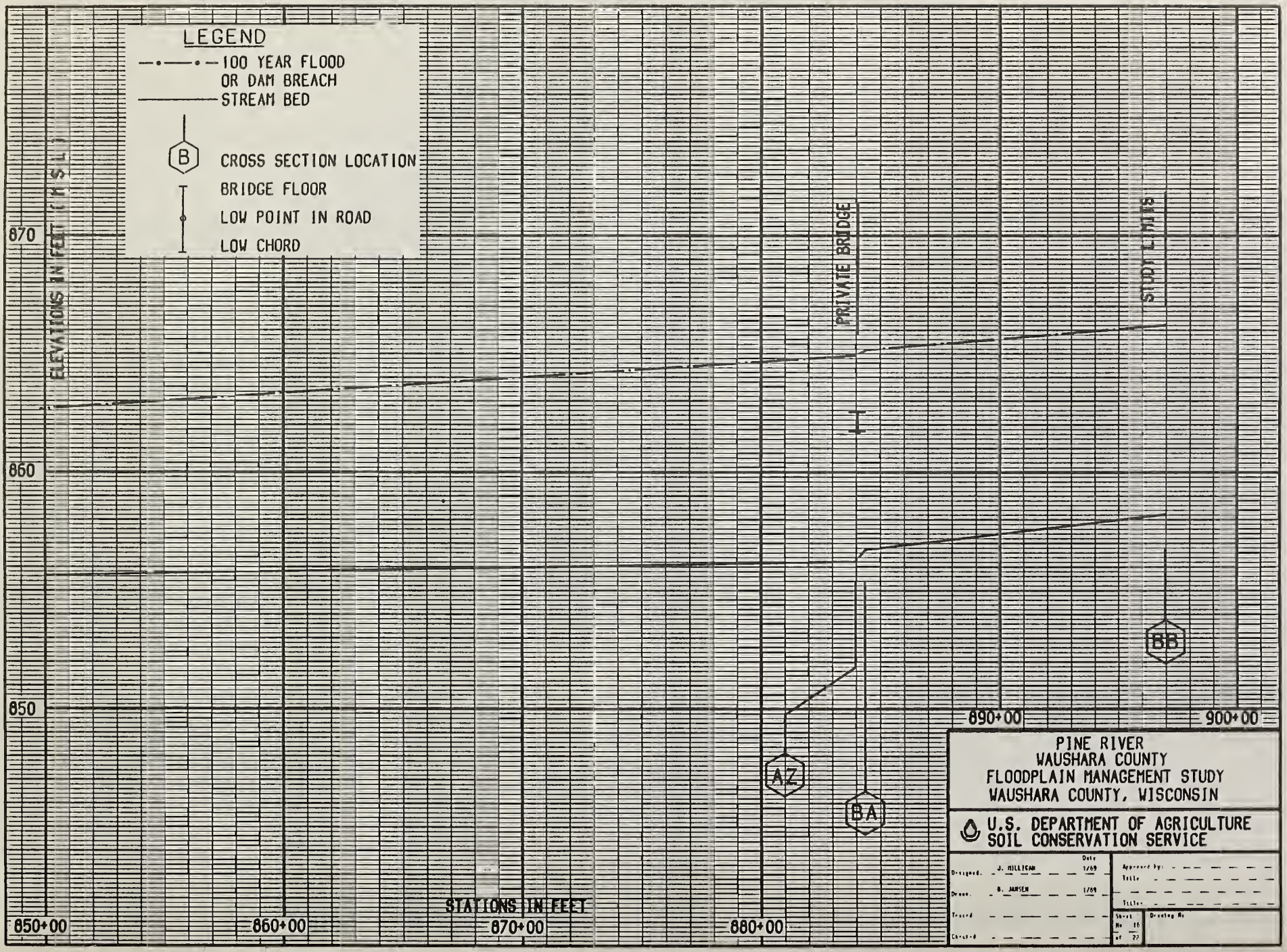

LEGEND
100 YEAR FLOOD OR DAM BREACH
STREAM BED
B
CROSS SECTION LOCATION
BRIDGE FLOOR
LOW POINT IN ROAD
LOW CHORD
ELEVATIONS IN FEET (MSL)
830
820
810
CONFLUENCE WITH POPPLE CREEK
PRIVATE BRIDGE NO.2
AJ
AK
AL
600+00
610+00
620+00
630+00
640+00
650+00
STATIONS IN FEET
PINE RIVER
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Designed J. MILLIGAN 1/69
Drawn D. JANSEN 1/69
Traced
Checked
Approved by
Title
Sheet No 13 of 22


LEGEND
100 YEAR FLOOD OR DAM BREACH
STREAM BED
CROSS SECTION LOCATION
BRIDGE FLOOR
LOW POINT IN ROAD
LOW CHORD
ELEVATIONS IN FEET (M.S.L.)
840
830
820
COUNTY HIGHWAY H
SAXEVILLE DAM
AM
AN
AO
650+00
660+00
670+00
680+00
690+00
700+00
STATIONS IN FEET
PINE RIVER
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Designed J. MILLIGAN 1/89
Drawn B. JAMSEN 1/89
Traced
Checked
Approved by:
Title
Date
Sheet No. 14 of 22
Drawing No.


LEGEND
100 YEAR FLOOD OR DAM BREACH
STREAM BED
CROSS SECTION LOCATION
BRIDGE FLOOR
LOW POINT IN ROAD
LOW CHORD
ELEVATIONS IN FEET (M.S.L.)
650
640
630
STONE ARCH BRIDGE
24TH LANE
COUNTY HIGHWAY Y
AP
AO
AR
AS
AT
AU
AV
AW
AX
700+00
710+00
720+00
730+00
740+00
750+00
STATIONS IN FEET
PINE RIVER
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Designed: J. MILLIGAN Date 1/69
Drawn: B. JANSEN 1/69
Traced
Checked
Approved by
Title
Date
Sheet No. 15 of 22
Drawing No.


ELEVATIONS IN FEET ( M S L )
860
850
840
AX
LEGEND
100 YEAR FLOOD OR DAM BREACH
STREAM BED
B
CROSS SECTION LOCATION
BRIDGE FLOOR
LOW POINT IN ROAD
LOW CHORD
750+00
760+00
770+00
780+00
790+00
800+00
STATIONS IN FEET
PINE RIVER
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Designed J. MILLIGAN 1/69
Drawn B. JAN-ER 1/69
Traced
Checked
Approved by
Title
Title
Sheet No. 16 of 24
Drawing No.


LEGEND
100 YEAR FLOOD OR DAM BREACH
STREAM BED
B
CROSS SECTION LOCATION
BRIDGE FLOOR
LOW POINT IN ROAD
LOW CHORD
ELEVATIONS IN FEET (MSL)
870
860
850
840+00
850+00
AY
STATIONS IN FEET
800+00
810+00
820+00
830+00
PINE RIVER
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Designed J. GILLIGAN 1/69
Drawn B. JANSEN 1/69
Traced
Checked
Approved by:
Title
Title:
Sheet No. 17 of 22
Drawing No.


LEGEND
100 YEAR FLOOD OR DAM BREACH
STREAM BED
B
CROSS SECTION LOCATION
BRIDGE FLOOR
LOW POINT IN ROAD
LOW CHORD
ELEVATIONS IN FEET (M.S.L.)
870
860
850
PRIVATE BRIDGE
STUDY LIMITS
AZ
BA
BB
850+00
860+00
870+00
880+00
890+00
900+00
STATIONS IN FEET
PINE RIVER
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Designed J. MILLIGAN 1/69
Drawn B. JARSEN 1/69
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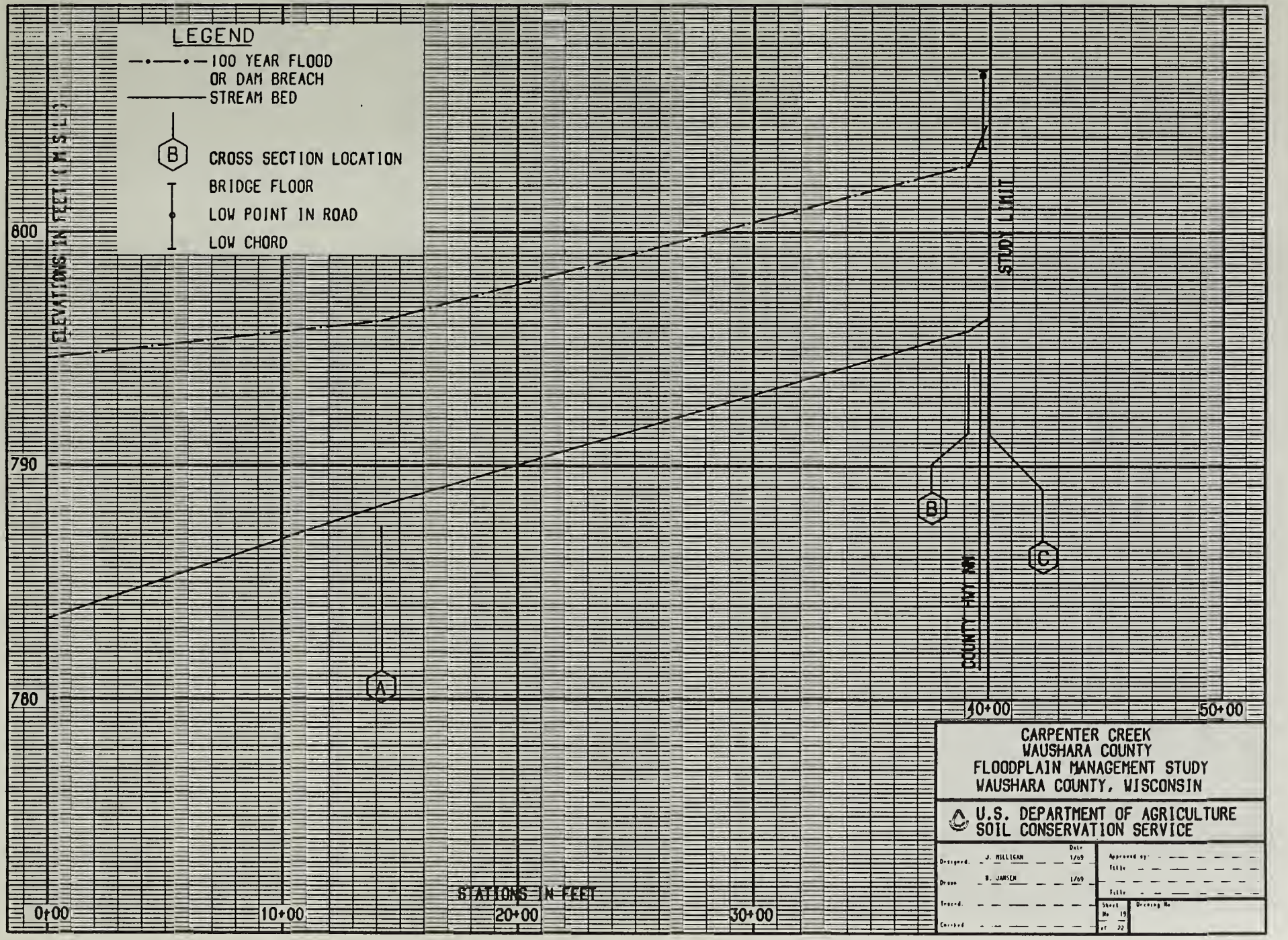
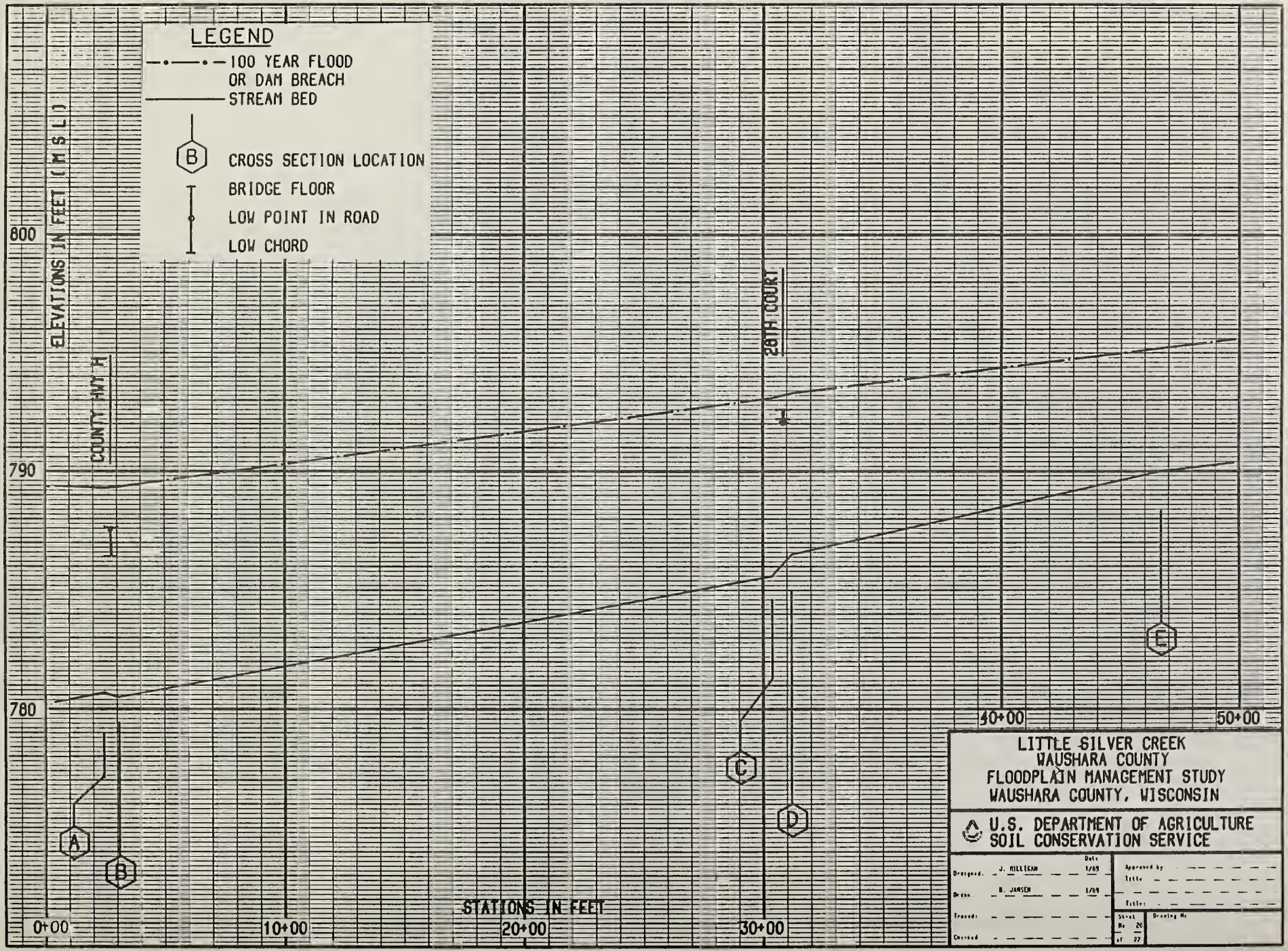
Checked
Approved by:
Title
Sheet No. 18 of 22
Drawing No.


LEGEND
100 YEAR FLOOD OR DAM BREACH
STREAM BED
B
CROSS SECTION LOCATION
BRIDGE FLOOR
LOW POINT IN ROAD
LOW CHORD
ELEVATIONS IN FEET (MSL)
800
790
780
STUDY LIMIT
COUNTY HWY MM
A
B
C
0+00
10+00
20+00
30+00
40+00
50+00
STATIONS IN FEET
CARPENTER CREEK
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Designed J. MILLIGAN 1/69
Drawn B. JANSEN 1/69
Traced
Checked
Approved by
Title
Title
Sheet No 19 of 22
Drawing No


LEGEND
100 YEAR FLOOD OR DAM BREACH
STREAM BED
B
CROSS SECTION LOCATION
BRIDGE FLOOR
LOW POINT IN ROAD
LOW CHORD
ELEVATIONS IN FEET (M S L)
800
790
780
COUNTY HWY H
28TH COURT
A
B
C
D
E
0+00
10+00
20+00
30+00
40+00
50+00
STATIONS IN FEET
LITTLE SILVER CREEK
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Designed J. MILLIGAN 1/69
Drawn B. JANSEN 1/69
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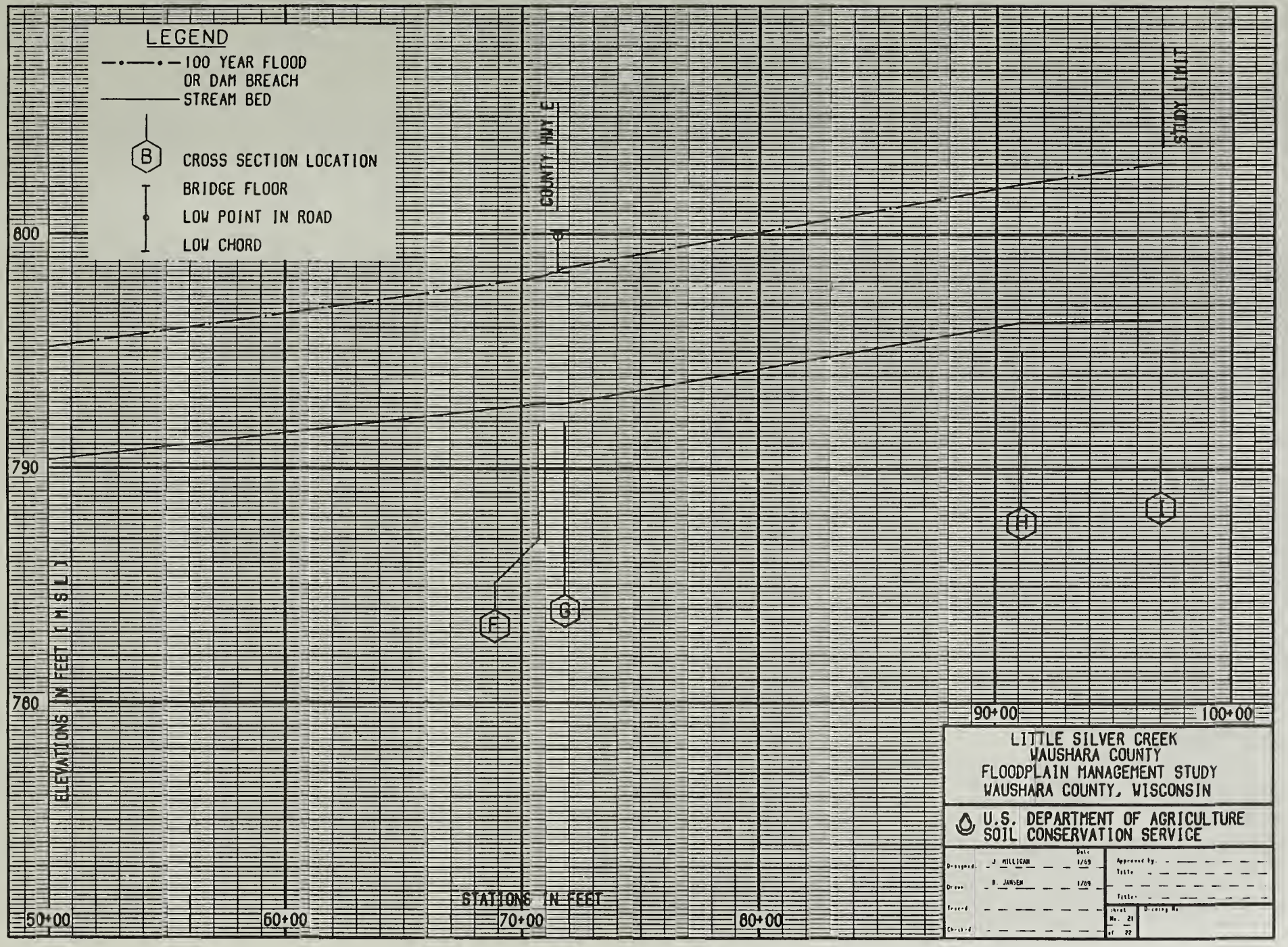
Checked
Approved by
Title
Date
Sheet No. 20 of 27
Drawing No.


LEGEND
100 YEAR FLOOD OR DAM BREACH
STREAM BED
CROSS SECTION LOCATION
BRIDGE FLOOR
LOW POINT IN ROAD
LOW CHORD
COUNTY HWY E
STUDY LIMIT
ELEVATIONS IN FEET (MSL)
800
790
780
STATIONS IN FEET
50+00
60+00
70+00
80+00
90+00
100+00
F
G
H
I
LITTLE SILVER CREEK
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Designed J. MILLIGAN 1/69
Drawn R. JANSEN 1/69
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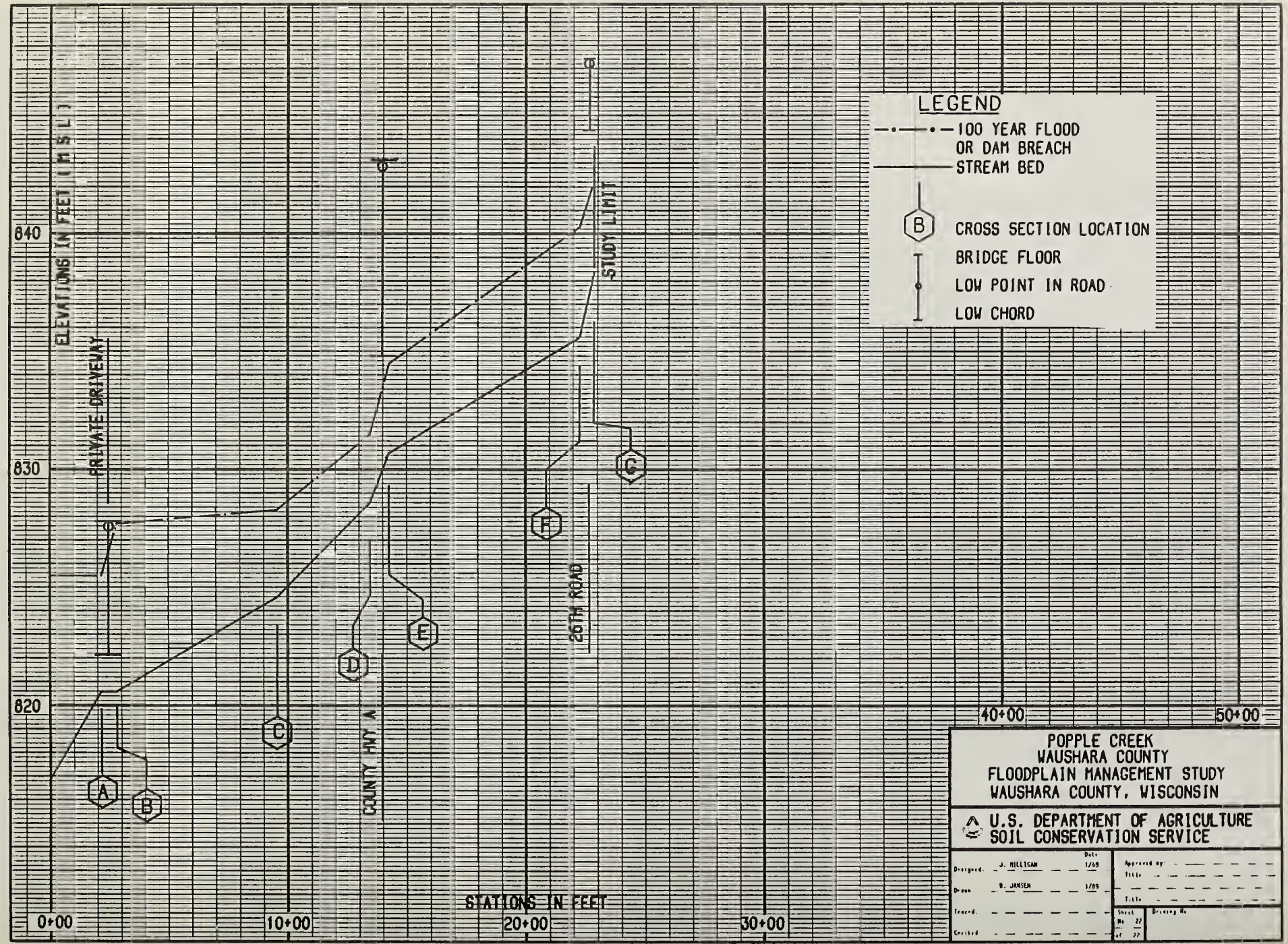
Checked
Approved by
Title
Title
Sheet No. 21 of 22
Drawing No.


LEGEND
100 YEAR FLOOD OR DAM BREACH
STREAM BED
CROSS SECTION LOCATION
BRIDGE FLOOR
LOW POINT IN ROAD
LOW CHORD
ELEVATIONS IN FEET ( M S L )
840
830
820
PRIVATE DRIVEWAY
COUNTY HWY A
26TH ROAD
STUDY LIMIT
A
B
C
D
E
F
G
0+00
10+00
20+00
30+00
40+00
50+00
STATIONS IN FEET
POPPLE CREEK
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Designed J. MILLIGAN 1/69
Drawn B. JANSEN 1/69
Traced
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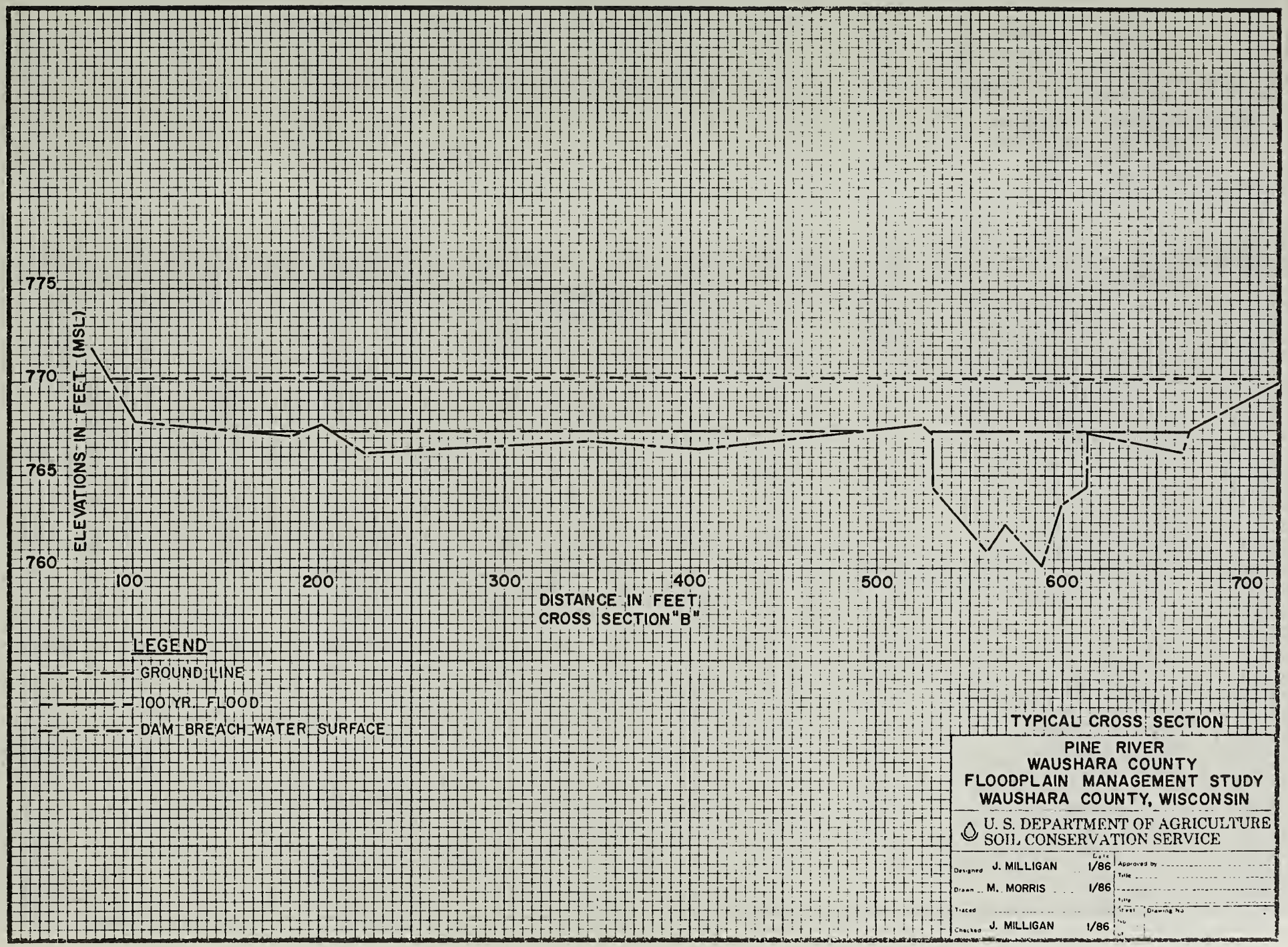
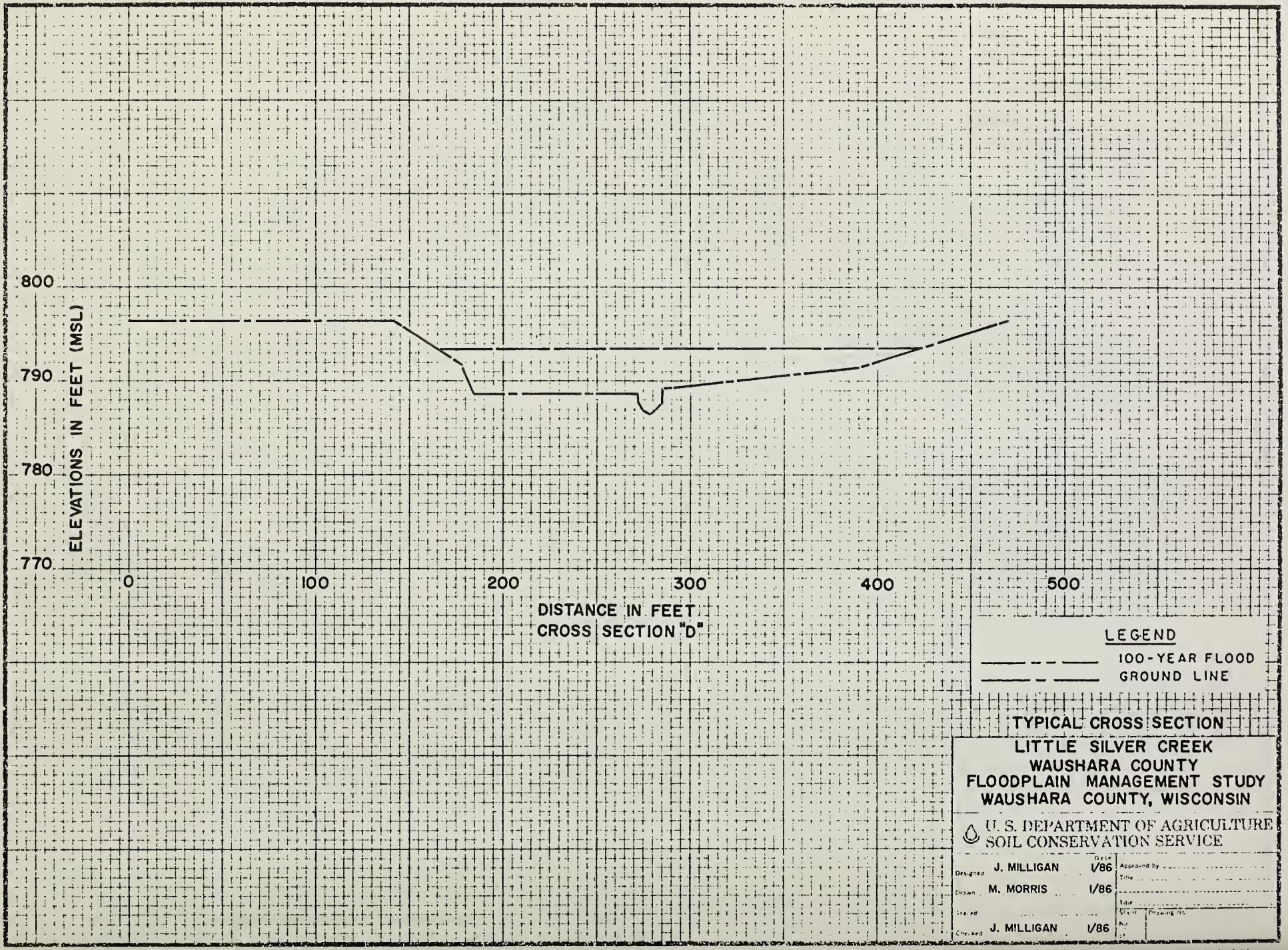
Title
Title
Sheet No 22 of 22
Drawing No.

# Appendix C

# TYPICAL SECTIONS


775
770
765
760
ELEVATIONS IN FEET (MSL)
100
200
300
400
500
600
700
DISTANCE IN FEET
CROSS SECTION "B"
LEGEND
GROUND LINE
100 YR. FLOOD
DAM BREACH WATER SURFACE
TYPICAL CROSS SECTION
PINE RIVER
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Designed J. MILLIGAN 1/86
Drawn M. MORRIS 1/86
Traced
Checked J. MILLIGAN 1/86
Approved by
Title
Drawing No.

C-1


800
790
780
770
ELEVATIONS IN FEET (MSL)
0
100
200
300
400
500
DISTANCE IN FEET
CROSS SECTION "D"
LEGEND
100-YEAR FLOOD
GROUND LINE
TYPICAL CROSS SECTION
LITTLE SILVER CREEK
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Designed J. MILLIGAN 1/86
Drawn M. MORRIS 1/86
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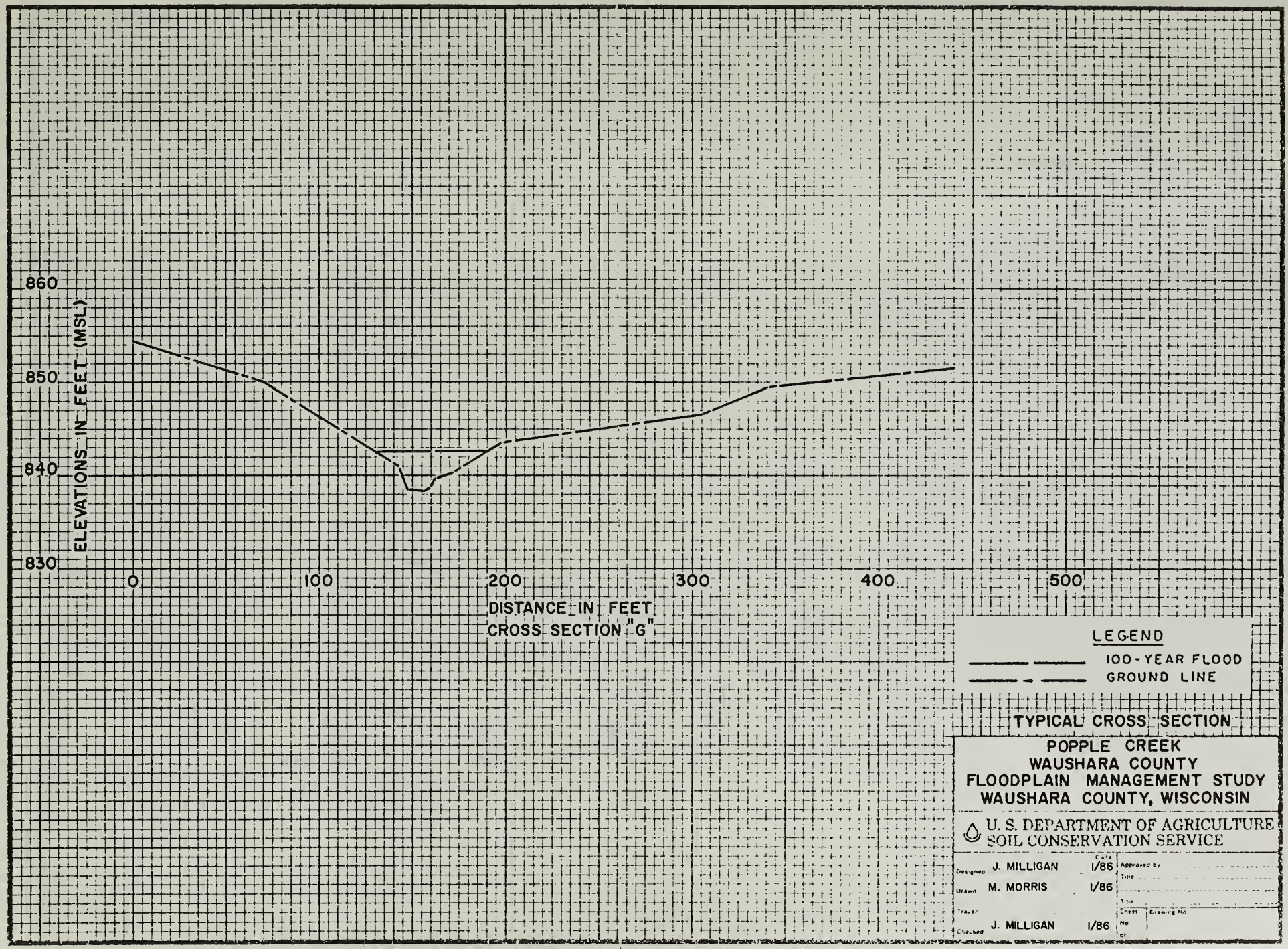
Checked J. MILLIGAN 1/86
Approved by
Title
Sheet No.
Drawing No.

C-2


860
850
840
830
ELEVATIONS IN FEET (MSL)
0
100
200
300
400
500
DISTANCE IN FEET
CROSS SECTION "G"
LEGEND
100-YEAR FLOOD
GROUND LINE
TYPICAL CROSS SECTION
POPPLE CREEK
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Designed J. MILLIGAN 1/86
Drawn M. MORRIS 1/86
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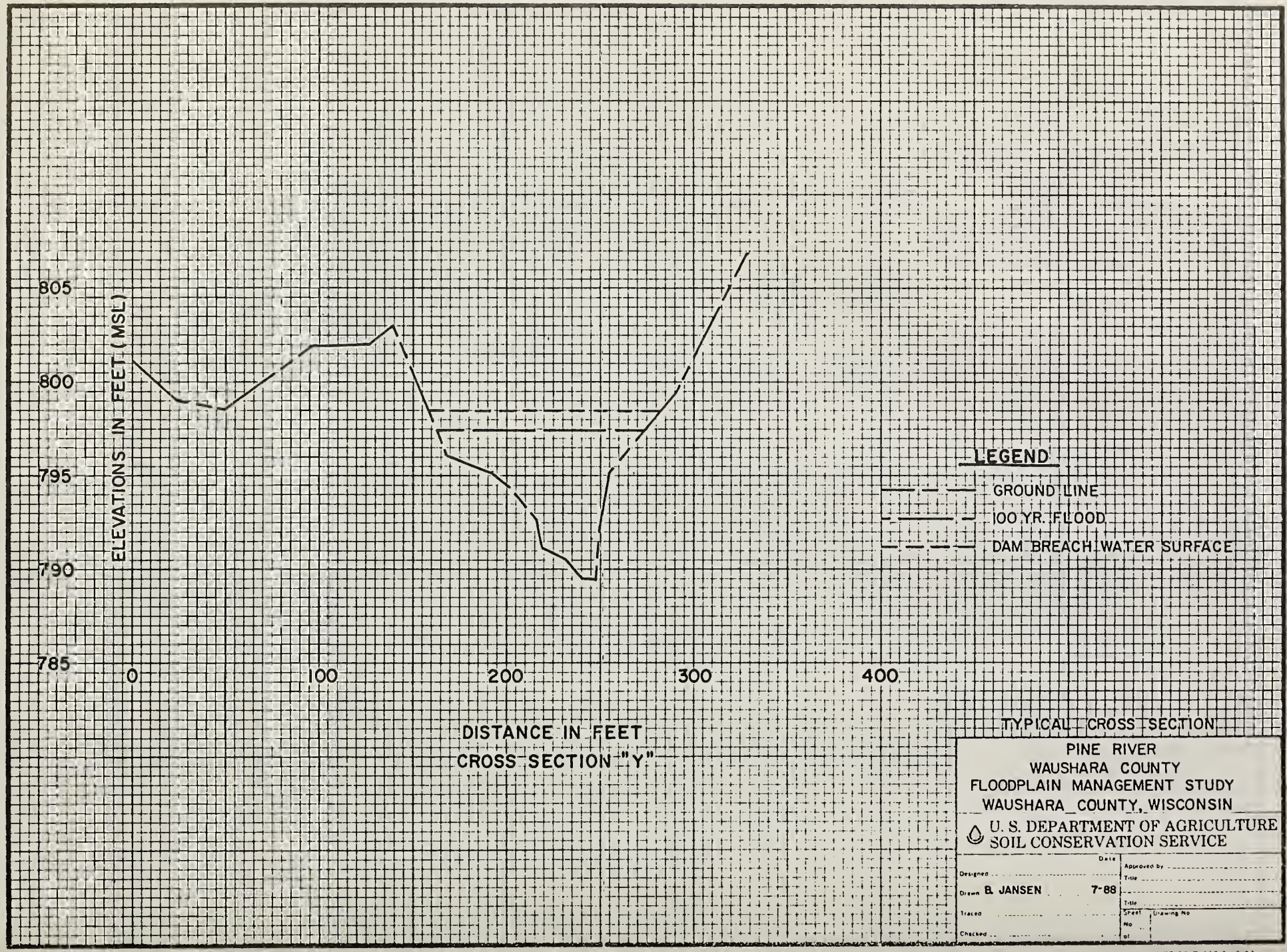
Checked J. MILLIGAN 1/86
Date
Approved by
Title
Sheet No
Drawing No.
SCS-ENG 111-A 6-81



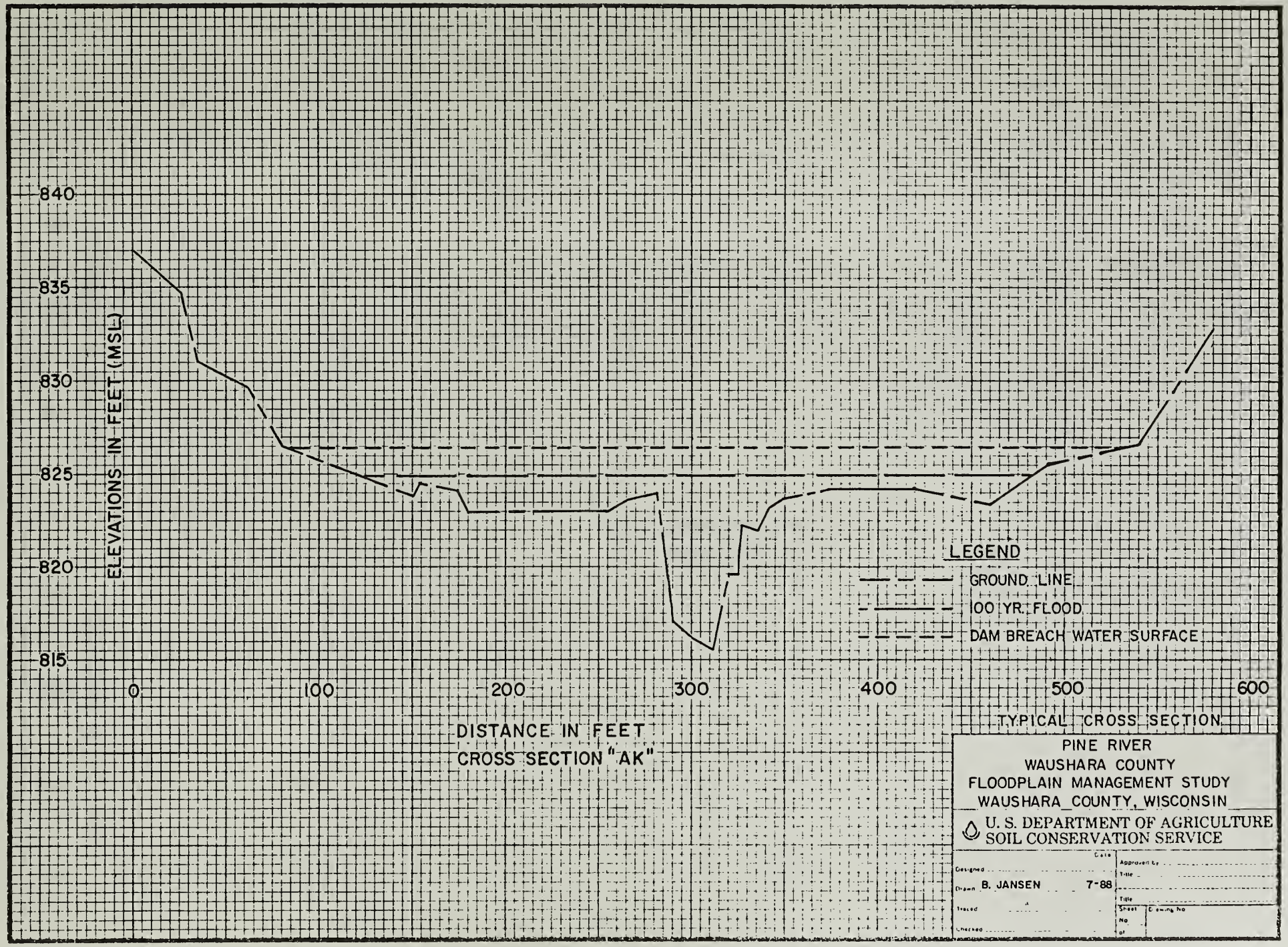

TYPICAL CROSS SECTION

PINE RIVER
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed
Drawn B. JANSEN 7-88
Traced
Checked
Approved by
Title
Sheet No of
Drawing No

SCS-ENG-315A 6-81


840
835
830
825
820
815
ELEVATIONS IN FEET (MSL)
0
100
200
300
400
500
600
DISTANCE IN FEET
CROSS SECTION "AK"
LEGEND
GROUND LINE
100 YR. FLOOD
DAM BREACH WATER SURFACE
TYPICAL CROSS SECTION
PINE RIVER
WAUSHARA COUNTY
FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Designed
Drawn B. JANSEN 7-88
Traced
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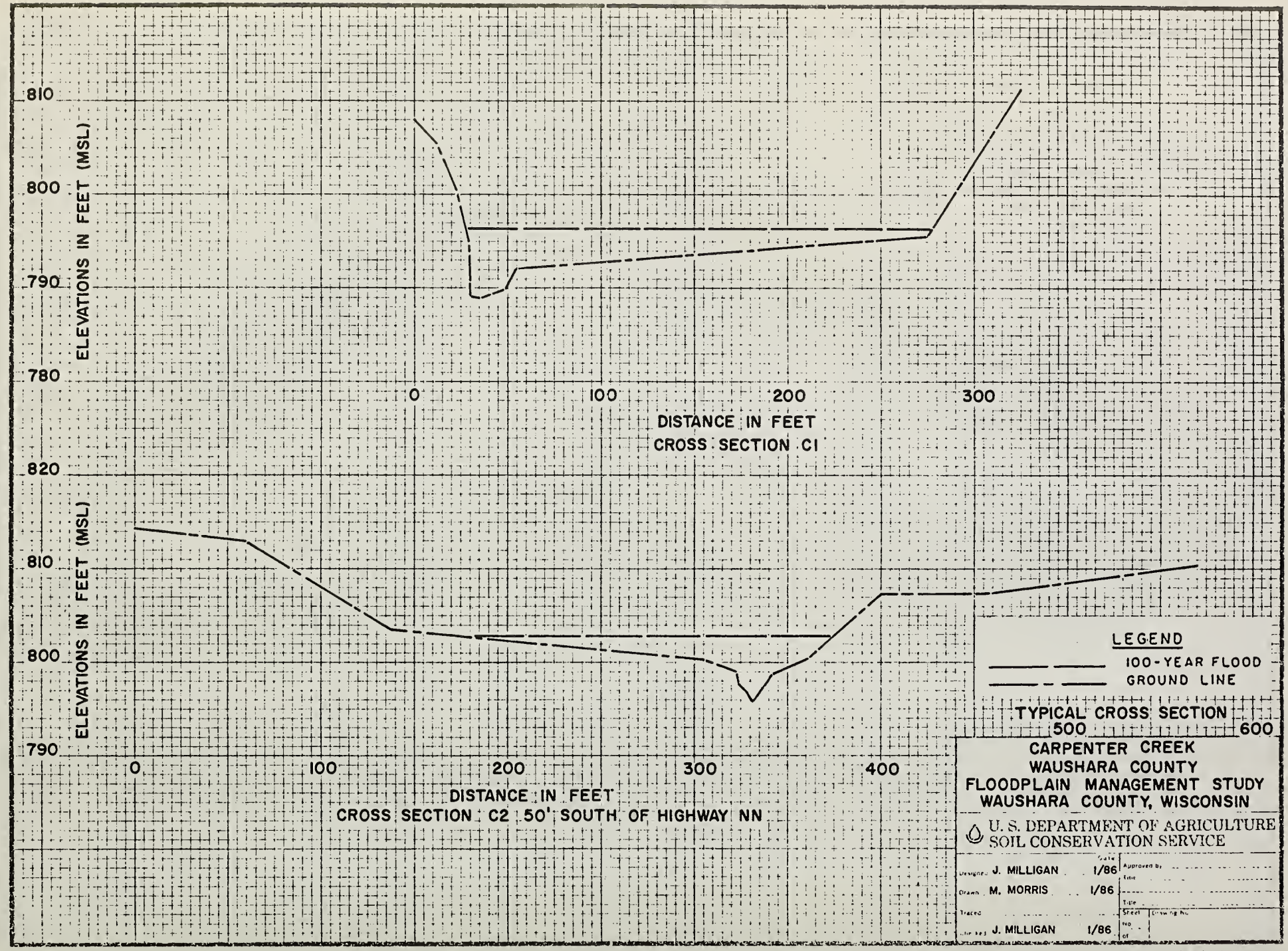
Approved by
Title
Sheet No
Drawing No
SCS ENG-315A 6-81



# Appendix D

# ELEVATION REFERENCE MARKS

## ELEVATION REFERENCE MARKS

| Reference Mark | Elev. (MSL) | Description |
|---|---|---|
| 1 | 778.066 | USGS BM-M-98 1934. A standard brass disk located on the north end of the west headwall of north bridge of two concrete bridges located in the Village of Poy Sippi, Waushara County. State Highway 49. |
| 2 | 789.54 | TBM-1. A spike in south side of WPL pole No. 19-13-7.2 on south side of Liberty Street across from Poy Sippi grade school. |
| 3 | 774.41 | TBM-2. A spike in the west side of a 15-inch ash tree 100 feet north of North River Terrace on west side of ditch from north along west line of section 8. |
| 4 | 782.10 | UE-17. A spike in west side of power pole No. 35-7 in field on west side of river 30 feet east of cross section 6P(H). |
| 5 | 803.24 | UE-18. A spike on north side of power pole No. 844 on south side of CTH H at cross section 7P(I). |
| 6 | 782.00 | UE-16. A spike in power pole No. 36-16 on east side of Wisconsin Street, 400 feet south of intersection with Commercial Street. |
| 7 | 792.62 | UE-20. A spike on north side of power pole No. 38-19 on south side of CTH H at cross section 8P(J). |
| 8 | 793.93 | UE-21. A spike in north side of power pole No. 48/33. Approximately 200 feet west of 32nd Drive to south on south side of CTH H at cross section 9P(K). |
| 9 | 786.96 | UE-22. A spike in power pole No. 14/33. Located approximately 400 feet west of Beaver Road intersection with County Highway H. Pole is located on south side of CTH H. |
| 10 | 785.30 | UE-25. A spike in north side of power pole No. 37/31 at cross section 11P(M). Pole is on the south side of CTH H. |
| 11 | 788.21 | UE-26. A spike in north side of power pole No. 30/36. Pole is on the south side of CTH H at cross section 12P(N). |
| 12 | 788.05 | UE-27. A spike in power pole No. 15/37, with transformer, on south side of CTH H. Located at cross section 13P(O). |
| 13 | 795.38 | UE-28. A spike in west side of power pole No. 51/39 with wire crossing CTH H to north. |

| | | |
|---|---|---|
| 14 | 798.51 | UE-29. A spike in power pole No. 35/47 on south side of CTH H at cross section 15P(Q). |
| 15 | 792.73 | UE-30. Top of the north end of the east headwall of the bridge on 28th Court crossing the Pine River. Located on the north line of Sec. 10, T. 19 N., R. 12 E. (town of Leon). |
| 16 | 821.95 | UE-36. A spike in north side of 48-inch oak tree. Located on the west side of 28th Court. Approximately 600 feet north of the intersection with Badger Road. |
| 17 | 851.03 | UE-37. A spike in west side of power pole. Located on east side of 28th Court. Approximately 100 feet north of hill top which is located in the NE 1/4, SW 1/4, Sec. 3, T. 19 N., R. 12 E. |
| 18 | 809.13 | UE-38. Top of steel reflector post on south side of Schroeder driveway and 100 feet west of 28th Court. |
| 19 | 822.66 | UE-39. Top of east end of 30-inch diameter corrugated metal pipe culvert under 28th Court. Located 600 feet north of the Sorenson farm buildings. |
| 20 | 825.18 | UE-40. Top of the ANR Pipe Line Co. gas riser (orange). Located on the north side of CTH NN at the intersection with 28th Court. |
| 21 | 804.95 | UE-41. Top of north end of 36-inch CMP carrying Carpenter Creek under CTH NN. Pipe is 15 feet east of a 10.5 x 7.1 foot corrugated metal pipe arch. |
| 22 | 817.15 | UE-42. A spike 3.5 feet above ground in west side of power pole No. 635. Located in NE corner of intersection of 28th Road and CTH NN. |
| 23 | 810.94 | UE-15. Top of south end of south wingwall on upstream side of the dam at Pine River. |
| 24 | 821.67 | UE-14. A spike in power pole No. 10. Located on the north side of CTH H in Pine River. Pole is approximately 750 feet west of the junction with CTH E. |
| 25 | 833.06 | UE-13. A spike in south side of power pole No. 22/0 on north side of CTH H across from Sorenson building. |
| 26 | 825.15 | UE-12. A spike on the south side of power pole No. 3/0 on north right-of-way of CTH H. Approximately 600 feet east of the intersection of 26th Road with CTH H. |
| 27 | 855.92 | UE-11. A spike on north side of power pole No. 39/26 on south side of CTH H at the junction with 26th Road. |

| | | |
|---|---|---|
| 28 | 861.91 | UE-10. A spike in west side of power pole No. 37/32 on east side of 26th Road. Approximately 800 feet north of CTH H. |
| 29 | 878.44 | UE-9. Top of 3-foot diameter rock on north side of 26th Road about 600 feet down (south) of hill top. |
| 30 | 877.97 | UE-8. A spike in north side of power pole No. 22/43 on south side of 26th Road. |
| 31 | 838.69 | UE-6. Top of 5-inch square concrete post. Located on east side of 26th Road. Approximately 100 feet south of Edgar Fraeters buildings. |
| 32 | 828.58 | UE-5. A nail in the north side of power pole No. 20-12-32 8/24 on south side of 26th Road between 29P(AF) and 30P(AG). |
| 33 | 827.65 | UE-4. On "X" on a 24-inch diameter white pine stump 40 feet northwest of road to small bridge in NW 1/4 of NW 1/4 of Sec. 32, T. 20 N., R. 12 E. |
| 34 | 868.17 | UE-2. Top of 3-foot diameter granite rock on the east right-of-way of 26th Road at curve to the southeast. |
| 35 | 888.64 | UE-1. Top of a large granite rock on south side of 26th Road. Approximately 600 feet east of junction with CTH W. |
| 36 | 835.06 | USGS square, a chipped square at the downstream end of the top left abutment at the gates. |
| 37 | 854.32 | UE-51. Top of steel post with house No. 3081 on south side of intersection of Portage and Willow Streets. |
| 38 | 834.83 | UE-55. A large round granite rock with chipped west side, covered with green lichen. Reading was taken on highest point. |
| 39 | 843.65 | UE-59. Top of north end of 72-inch diameter corrugated metal culvert pipe on crossing above CTH A and below Lake Kristine dam. |
| 40 | 847.86 | UE-60. Spike on south side of power transformer pole 1200 feet west of intersection with CTH W. Sixty feet south of southwest corner of barn. |
| 41 | 854.01 | UE-61. Top of northeast corner of outlet structure for Lake Kristine. |
| 42 | 845.62 | UE-63. Top north end of east headwall of rock arch bridge at Ding Supper Club. |

| | | |
|---|---|---|
| 43 | 837.40 | UE-64. Top of west end of highest rock in a rubble masonry check dam of south end of cross section 37P(AN). |
| 44 | 865.44 | UE-65. Top of a large granite rock located on the north side of Portage Road at cross section 42P(AR). |
| 45 | 831.80 | UE-66. Top of the north steel pier on the west side of the bridge on 24th Lane. |
| 46 | 859.14 | UE-67. Top of northeast headwall of CTH A bridge (level with road surface). |
| 47 | 899.82 | UE-70. A spike in north side of power pole No. 630. Located on south side of CTH A. Approximately 2000 feet west of the Pine River Bridge. |
| 48 | 873.05 | UE-71. Top of west 6x6 inch gate post with hinges. Located on the north side of CTH A near cross section AY. |
| 49 | 860.19 | UE-72. A spike on the east side of a 12-inch diameter ash tree that "Y"'s into two major trunks, approximately 6 feet north of the north river bank at cross section AY. |
| 50 | 928.02 | UE-73. Top pail handle knob on old hand pump faucet on north side of CTH A at top of hill. |
| 51 | 899.46 | UE-74. A spike in power pole on west side of driveway. Approximately 350 feet north of UE-73 (RM 50). |
| 52 | 885.44 | UE-75. Top of a 2-inch iron pipe on the north right-of-way of CTH A and along the west line of Sec. 26, T. 20 N., R. 11 E. Springwater Township. |
| 53 | 866.23 | UE-76. Top of first 1-inch diameter pipe south of the west edge of the bridge crossing the Pine River at the confluence with the Wilson Lake outlet. |

Appendix E

# TABULATION OF
# WATER SURFACE ELEVATIONS
# DISCHARGES
# AND
# FLOODWAY TABLES

| Flooding Source | | Discharge - Elevation | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Cross section | Distance 1/ | 10-year | | 50-year | | 100-year | | 500-year | |
| | | Q CFS | Elev. MSL | Q CFS | Elev. MSL | Q CFS | Elev. MSL | Q CFS | Elev. MSL |
| PINE RIVER | | | | | | | | | |
| A | 0 | 920 | 764.4 | 1300 | 765.3 | 1450 | 765.7 | 1900 | 766.4 |
| B | 1920 | 920 | 766.1 | 1300 | 767.1 | 1450 | 767.4 | 1900 | 768.1 |
| C | 3040 | 920 | 767.0 | 1300 | 767.9 | 1450 | 768.3 | 1900 | 769.0 |
| D | 3320 | 895 | 767.1 | 1265 | 768.1 | 1412 | 768.5 | 1850 | 769.3 |
| E | 3625 | 400 | 767.7 | 580.0 | 768.6 | 644 | 769.0 | 709 | 769.6 |
| | 3730 | STATE HIGHWAY 49 | | | | | | | |
| F | 3780 | 400 | 768.5 | 580.0 | 769.4 | 644 | 769.8 | 709 | 770.2 |
| G | 3940 | 400 | 768.5 | 580.0 | 769.4 | 644 | 769.8 | 709 | 770.2 |
| | 4040 | POY SIPPI DAM | | | | | | | |
| H | 4880 | 895 | 774.3 | 1265 | 775.0 | 1412 | 775.5 | 1850 | 776.6 |
| I | 6560 | 895 | 774.4 | 1265 | 775.1 | 1412 | 775.6 | 1850 | 776.7 |
| J | 8440 | 895 | 774.8 | 1265 | 775.5 | 1412 | 775.9 | 1850 | 776.9 |
| K | 9720 | 895 | 775.4 | 1265 | 776.0 | 1412 | 776.3 | 1850 | 777.2 |
| L | 11650 | 871 | 776.2 | 1231 | 776.8 | 1373 | 777.1 | 1800 | 777.8 |
| M | 15090 | 871 | 779.1 | 1231 | 779.7 | 1373 | 779.8 | 1800 | 780.4 |
| N | 17370 | 871 | 780.3 | 1231 | 780.9 | 1373 | 781.1 | 1800 | 781.6 |
| O | 20870 | 871 | 782.0 | 1231 | 782.9 | 1373 | 783.1 | 1800 | 783.6 |
| P | 24510 | 870 | 784.5 | 1230 | 785.4 | 1380 | 785.6 | 1750 | 786.2 |
| Q | 26440 | 870 | 786.0 | 1230 | 786.8 | 1380 | 787.1 | 1750 | 787.7 |
| R | 28720 | 870 | 787.6 | 1230 | 788.7 | 1380 | 789.0 | 1750 | 789.8 |
| S | 29840 | 750 | 788.3 | 1061 | 789.4 | 1190 | 789.7 | 1540 | 790.5 |
| | 29860 | 28TH COURT | | | | | | | |
| T | 29900 | 750 | 789.0 | 1061 | 789.6 | 1190 | 789.9 | 1540 | 790.7 |
| U | 30330 | 750 | 789.1 | 1061 | 789.8 | 1190 | 790.1 | 1540 | 790.9 |
| V | 32580 | 750 | 789.8 | 1061 | 790.4 | 1190 | 790.7 | 1540 | 791.3 |
| W | 35620 | 750 | 791.4 | 1061 | 792.1 | 1190 | 792.4 | 1540 | 793.1 |

1/ Distance in feet from downstream study limit.



TABLE 1

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
PINE RIVER FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN

# DISCHARGE - ELEVATION DATA

PINE RIVER

| Flooding Source | | Discharge - Elevation | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Cross section | Distance 1/ | 10-year | | 50-year | | 100-year | | 500-year | |
| | | Q CFS | Elev. MSL | Q CFS | Elev. MSL | Q CFS | Elev. MSL | Q CFS | Elev. MSL |
| PINE RIVER cont. | | | | | | | | | |
| X | 37250 | 589 | 791.9 | 834 | 792.7 | 935 | 793.0 | 1210 | 793.7 |
| Y | 40520 | 589 | 796.0 | 834 | 797.1 | 935 | 797.4 | 1210 | 798.3 |
| Z | 41105 | 538 | 798.0 | 761 | 798.7 | 854 | 798.9 | 1105 | 799.7 |
| | 41265 | COUNTY TRUNK HIGHWAY E | | | | | | | |
| AA | 41315 | 538 | 798.8 | 761 | 799.6 | 854 | 800.1 | 1105 | 801.7 |
| | 41365 | PINE RIVER DAM | | | | | | | |
| AB | 42525 | 589 | 807.8 | 834 | 807.9 | 935 | 808.0 | 1210 | 808.2 |
| AC | 43845 | 589 | 809.2 | 834 | 809.7 | 935 | 810.0 | 1210 | 810.5 |
| AD | 47295 | 589 | 813.5 | 834 | 814.3 | 935 | 814.6 | 1210 | 815.1 |
| AE | 51275 | 589 | 816.6 | 834 | 817.4 | 935 | 817.7 | 1210 | 818.2 |
| AF | 53915 | 589 | 817.2 | 834 | 818.0 | 935 | 818.3 | 1210 | 818.9 |
| AG | 57295 | 589 | 819.0 | 834 | 819.8 | 935 | 820.2 | 1210 | 820.8 |
| AH | 57315 | 589 | 819.7 | 834 | 820.2 | 935 | 820.4 | 1210 | 820.8 |
| | 57330 | PRIVATE BRIDGE NO. 1 | | | | | | | |
| AI | 60650 | 589 | 821.2 | 834 | 822.0 | 935 | 822.3 | 1210 | 823.0 |
| AJ | 62950 | 589 | 822.9 | 834 | 823.8 | 935 | 824.2 | 1210 | 824.9 |
| AK | 64050 | 535 | 823.5 | 754 | 824.5 | 845 | 824.9 | 1100 | 825.7 |
| | 64085 | PRIVATE BRIDGE NO. 2 | | | | | | | |
| AL | 64115 | 535 | 824.2 | 754 | 824.8 | 845 | 825.1 | 1100 | 825.9 |
| AM | 66215 | 535 | 825.6 | 754 | 826.4 | 845 | 826.7 | 1100 | 827.7 |
| | 66265 | COUNTY HIGHWAY W | | | | | | | |
| | 66300 | SAXVILLE DAM | | | | | | | |
| AN | 67300 | 535 | 835.0 | 754 | 835.2 | 845 | 835.3 | 1100 | 835.4 |
| AO | 68700 | 535 | 835.1 | 754 | 835.4 | 845 | 835.5 | 1100 | 835.6 |
| AP | 70100 | 535 | 836.4 | 754 | 831.1 | 845 | 837.4 | 1100 | 837.8 |
| | 70140 | BRIDGE (PRIVATE) | | | | | | | |

1/ Distance in feet from downstream study limit.



TABLE 1

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
PINE RIVER FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN

DISCHARGE - ELEVATION DATA

PINE RIVER

| Flooding Source | | Discharge - Elevation | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Cross section | Distance 1/ | 10-year | | 50-year | | 100-year | | 500-year | |
| | | Q CFS | Elev. MSL | Q CFS | Elev. MSL | Q CFS | Elev. MSL | Q CFS | Elev. MSL |
| PINE RIVER cont. | | | | | | | | | |
| AQ | 70185 | 535 | 837.5 | 754 | 838.8 | 845 | 839.3 | 1100 | 840.8 |
| AR | 71345 | 535 | 846.9 | 754 | 847.8 | 845 | 848.1 | 1100 | 848.9 |
| AS | 72065 | 535 | 849.8 | 754 | 850.5 | 845 | 850.8 | 1100 | 851.5 |
| | 72115 | 24TH LANE | | | | | | | |
| AT | 72155 | 535 | 850.6 | 754 | 852.4 | 845 | 852.4 | 1100 | 853.5 |
| AU | 72955 | 535 | 852.3 | 754 | 853.5 | 845 | 853.7 | 1100 | 854.6 |
| | 72995 | COUNTY TRUNK HIGHWAY A | | | | | | | |
| AV | 73030 | 535 | 852.4 | 754 | 854.1 | 845 | 854.6 | 1100 | 856.1 |
| AW | 73630 | 535 | 854.0 | 754 | 855.1 | 845 | 855.5 | 1100 | 856.7 |
| AX | 74950 | 510 | 855.7 | 719 | 856.6 | 806 | 857.0 | 1050 | 857.7 |
| AY | 82190 | 510 | 860.0 | 719 | 860.5 | 806 | 860.8 | 1050 | 861.2 |
| AZ | 88400 | 450 | 864.0 | 675 | 864.8 | 760 | 864.4 | 1000 | 865.5 |
| | 88420 | PRIVATE BRIDGE | | | | | | | |
| BA | 88440 | 450 | 864.1 | 675 | 864.8 | 760 | 865.0 | 1000 | 865.5 |
| BB | 89700 | 450 | 865.3 | 675 | 866.0 | 760 | 866.2 | 1000 | 866.6 |

1/ Distance in feet from downstream study limit.



TABLE 1

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
PINE RIVER FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN

DISCHARGE - ELEVATION DATA

PINE RIVER

| Flooding Source | | Discharge - Elevation | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Cross section | Distance 1/ | 10-year | | 50-year | | 100-year | | 500-year | |
| | | Q CFS | Elev. MSL | Q CFS | Elev. MSL | Q CFS | Elev. MSL | Q CFS | Elev. MSL |
| CARPENTER CREEK | | | | | | | | | |
| CONFLUENCE | 0 | 249 | 793.5 | 378 | 794.3 | 427 | 794.6 | 565 | 795.2 |
| A | 1430 | 249 | 794.9 | 378 | 795.9 | 427 | 796.2 | 565 | 796.8 |
| B | 3920 | 249 | 801.8 | 378 | 802.7 | 427 | 802.9 | 565 | 803.5 |
| | 3970 | COUNTY TRUNK HIGHWAY NN | | | | | | | |
| C | 4010 | 249 | 803.0 | 378 | 804.5 | 427 | 805.0 | 565 | 806.9 |
| LITTLE SILVER CREEK | | | | | | | | | |
| CONFLUENCE | 0 | 154 | 787.9 | 218 | 789.0 | 246 | 789.4 | 315 | 790.2 |
| A | 250 | 154 | 787.9 | 218 | 789.0 | 246 | 789.4 | 315 | 789.2 |
| | 275 | COUNTY TRUNK HIGHWAY HH | | | | | | | |
| B | 315 | 154 | 788.2 | 218 | 789.0 | 246 | 789.4 | 315 | 790.2 |
| C | 3045 | 154 | 792.3 | 218 | 792.9 | 246 | 793.1 | 315 | 793.4 |
| | 3080 | 28TH STREET | | | | | | | |
| D | 3125 | 154 | 792.7 | 218 | 793.1 | 246 | 793.3 | 315 | 793.6 |
| E | 4675 | 154 | 794.4 | 218 | 794.9 | 246 | 795.2 | 315 | 795.4 |
| F | 7075 | 154 | 797.5 | 218 | 797.9 | 246 | 798.2 | 315 | 798.5 |
| | 7140 | COUNTY TRUNK HIGHWAY E | | | | | | | |
| G | 7180 | 154 | 797.9 | 218 | 798.4 | 246 | 798.6 | 315 | 798.9 |
| H | 9110 | 154 | 801.4 | 218 | 802.0 | 246 | 802.2 | 315 | 802.8 |
| I | 9700 | 154 | 802.3 | 218 | 802.9 | 246 | 803.1 | 315 | 803.6 |

1/ Distance in feet from confluence with Pine River.



TABLE 1

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
PINE RIVER FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN

DISCHARGE - ELEVATION DATA

CARPENTER AND LITTLE SILVER CREEKS

| Flooding Source | | Discharge - Elevation | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Cross section | Distance 1/ | 10-year | | 50-year | | 100-year | | 500-year | |
| | | Q CFS | Elev. MSL | Q CFS | Elev. MSL | Q CFS | Elev. MSL | Q CFS | Elev. MSL |
| POPPLE CREEK | | | | | | | | | |
| CONFLUENCE | 0 | 52 | 822.9 | 79 | 823.8 | 91 | 824.2 | 115 | 824.9 |
| A | 220 | 52 | 823.5 | 79 | 824.4 | 91 | 824.6 | 115 | 825.3 |
| | 250 | PRIVATE DRIVEWAY | | | | | | | |
| B | 285 | 52 | 824.6 | 79 | 826.6 | 91 | 827.7 | 115 | 828.3 |
| C | 960 | 52 | 826.6 | 79 | 827.6 | 91 | 828.3 | 115 | 828.8 |
| D | 1350 | 52 | 830.7 | 79 | 831.2 | 91 | 831.5 | 115 | 831.8 |
| | 1390 | COUNTY TRUNK HIGHWAY A | | | | | | | |
| E | 1430 | 52 | 833.3 | 79 | 834.1 | 91 | 834.5 | 115 | 835.3 |
| F | 2230 | 52 | 839.3 | 79 | 839.9 | 91 | 840.3 | 115 | 840.7 |
| | 2260 | 26TH ROAD | | | | | | | |
| G | 2290 | 52 | 841.1 | 79 | 841.9 | 91 | 842.2 | 115 | 842.8 |

1/ Distance in feet from confluence with Pine River.

TABLE 1

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
PINE RIVER FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN

DISCHARGE - ELEVATION DATA

POPPLE CREEK

TABLE 2
FLOODWAY DATA

| FLOODING SOURCE | | FLOODWAY | | | BASE FLOOD WATER SURFACE ELEVATION 2/ | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE 1/ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WITHOUT FLOODWAY WITH DAM BREACH | WITHOUT FLOODWAY | WITH 3/ FLOODWAY AND DAM BREACH | INCREASE |
| PINE RIVER | | | | | | | | |
| A | 0 | 591 | 626 | 2.32 | 768.4 | 765.7 | 768.4 | 2.7 |
| B | 1920 | 160 | 700 | 2.10 | 770.2 | 767.4 | 770.2 | 2.8 |
| C | 3040 | 163 | 716 | 3.03 | 771.1 | 768.3 | 771.1 | 2.8 |
| D | 3320 | 177 | 602 | 2.41 | 771.6 | 768.5 | 771.6 | 3.1 |
| E | 3625 | 63 | 239 | 3.41 | 772.6 | 769.0 | 772.6 | 3.6 |
| F | 3780 | 114 | 672 | 1.21 | 775.1 | 769.8 | 775.1 | 5.3 |
| G | 3940 | 124 | 493 | 1.65 | 775.2 | 769.8 | 775.2 | 5.4 |
| H | 4880 | 191 | 979 | 1.44 | 778.2 | 775.5 | 778.2 | 3.7 |
| I | 6560 | 379 | 1397 | 1.01 | 778.2 | 775.6 | 778.2 | 2.6 |
| J | 8440 | 216 | 755 | 1.87 | 778.3 | 775.9 | 778.3 | 3.6 |
| K | 9720 | 369 | 877 | 1.61 | 778.3 | 776.3 | 778.3 | 2.0 |
| L | 11650 | 857 | 1548 | 0.89 | 778.5 | 777.1 | 778.5 | 1.4 |
| M | 15090 | 984 | 2292 | 0.60 | 780.3 | 779.8 | 780.3 | 0.5 |
| N | 17370 | 607 | 1951 | 0.70 | 781.3 | 781.1 | 781.3 | 0.2 |
| O | 20870 | 814 | 1784 | 0.77 | 783.2 | 783.1 | 783.2 | 0.1 |
| P | 24510 | 1040 | 2031 | 0.68 | 785.7 | 785.6 | 785.7 | 0.1 |
| Q | 26440 | 223 | 982 | 1.41 | 787.1 | 787.1 | 787.1 | 0 |
| R | 28720 | 250 | 893 | 1.55 | 789.0 | 789.0 | 789.0 | 0 |
| S | 29840 | 441 | 1379 | 0.86 | 789.7 | 789.7 | 789.7 | 0 |
| T | 29900 | 713 | 1713 | 0.69 | 789.9 | 789.9 | 789.9 | 0 |
| U | 30330 | 265 | 1141 | 1.04 | 790.1 | 790.1 | 790.1 | 0 |
| V | 32580 | 578 | 2154 | 0.55 | 790.7 | 790.7 | 790.7 | 0 |
| W | 35620 | 169 | 806 | 1.48 | 792.5 | 792.4 | 792.5 | 0.1 |
| X | 37250 | 426 | 1203 | 0.78 | 793.1 | 793.0 | 793.1 | 0.1 |
| Y | 40520 | 112 | 403 | 2.32 | 798.6 | 797.4 | 798.6 | 1.2 |
| Z | 41105 | 89 | 227 | 3.76 | 801.1 | 798.9 | 801.1 | 1.1 |

1/ DISTANCE IN FEET FROM STUDY LIMIT
2/ WATER SURFACE ELEVATION WITHOUT DEBRIS OR ICE BLOCKAGE
3/ ELEVATIONS USED FOR APPENDIX B PROFILES

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
WAUSHARA COUNTY FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN

FLOODWAY DATA
PINE RIVER

TABLE2
FLOODWAY DATA

| FLOODING SOURCE | | FLOODWAY | | | BASE FLOOD WATER SURFACE ELEVATION 2/ | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE 1/ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WITHOUT FLOODWAY WITH DAM BREAK | WITHOUT FLOODWAY | WITH FLOODWAY AND DAM BREACH | INCREASE |
| PINE RIVER CONT. | | | | | | | | |
| AA | 41315 | 37 | 155 | 5.50 | 805.3 | 800.1 | 805.3 | 5.2 |
| AB | 42525 | 81 | 307 | 3.05 | 809.2 | 808.0 | 809.2 | 1.2 |
| AC | 43845 | 256 | 436 | 2.15 | 810.6 | 810.0 | 810.6 | 0.6 |
| AD | 47295 | 387 | 766 | 1.22 | 814.7 | 814.6 | 814.7 | 0.1 |
| AE | 51275 | 285 | 953 | 0.98 | 817.7 | 817.7 | 817.7 | 0 |
| AF | 53915 | 524 | 1406 | 0.67 | 818.3 | 818.3 | 818.3 | 0 |
| AG | 57295 | 425 | 1036 | 0.90 | 820.2 | 820.2 | 820.2 | 0 |
| AH | 57315 | 410 | 554 | 1.69 | 820.4 | 820.4 | 820.4 | 0 |
| AI | 60650 | 463 | 856 | 1.09 | 822.7 | 822.3 | 822.7 | 0.4 |
| AJ | 62950 | 133 | 434 | 2.15 | 825.2 | 824.2 | 825.2 | 1.0 |
| AK | 64050 | 226 | 579 | 1.46 | 826.4 | 824.9 | 826.4 | 1.5 |
| AL | 64115 | 78 | 374 | 2.26 | 826.5 | 825.1 | 826.5 | 1.4 |
| AM | 66215 | 87 | 322 | 2.62 | 826.7 | 826.7 | 826.7 | 0 |
| AN | 67300 | 679 | 1143 | 0.74 | 835.3 | 835.3 | 835.3 | 0 |
| AO | 68700 | 277 | 600 | 1.41 | 835.5 | 835.5 | 835.5 | 0 |
| AP | 70100 | 62 | 245 | 3.45 | 837.4 | 837.4 | 837.4 | 0 |
| AQ | 70185 | 100 | 423 | 2.00 | 839.3 | 839.3 | 839.3 | 0 |
| AR | 71345 | 159 | 242 | 3.49 | 848.1 | 848.1 | 848.1 | 0 |
| AS | 72065 | 79 | 227 | 3.73 | 850.8 | 850.8 | 850.8 | 0 |
| AT | 72155 | 237 | 498 | 1.70 | 852.4 | 852.4 | 852.4 | 0 |
| AU | 72955 | 328 | 372 | 2.27 | 853.7 | 853.7 | 853.7 | 0 |
| AV | 73030 | 333 | 677 | 1.25 | 854.6 | 854.6 | 854.6 | 0 |
| AW | 73630 | 373 | 648 | 1.30 | 855.5 | 855.5 | 855.5 | 0 |
| AX | 74950 | 568 | 1135 | 0.71 | 857.0 | 857.0 | 857.0 | 0 |
| AY | 82190 | 790 | 1425 | 0.56 | 860.8 | 860.8 | 860.8 | 0 |
| AZ | 88400 | 843 | 1529 | 0.50 | 864.9 | 864.4 | 864.9 | 0.5 |

1/ DISTANCE IN FEET FROM STUDY LIMIT
2/ WATER SURFACE ELEVATION WITHOUT DEBRIS OR ICE BLOCKAGE

U.S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
WAUSHARA COUNTY FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN

FLOODWAY DATA
PINE RIVER

TABLE 2
FLOODWAY DATA

| FLOODING SOURCE | | FLOODWAY | | | BASE FLOOD WATER SURFACE ELEVATION 2/ | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE 1/ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WITHOUT FLOODWAY WITH DAM BREAK | WITHOUT FLOODWAY | WITH 4/ FLOODWAY AND DAM BREACH | INCREASE |
| PINE RIVER CONT. | | | | | | | | |
| BA | 88440 | 868 | 1674 | 0.45 | 685.1 | 865.0 | 865.1 | 0.1 |
| BB | 89700 | 1000 | 1905 | 0.40 | 866.2 | 866.2 | 866.2 | 0 |
| CARPENTER CREEK 3/ | | | | | | | | |
| A | 1430 | 249 | 689 | 0.62 | 796.2 | 796.2 | 796.2 | 0 |
| B | 3920 | 219 | 410 | 1.04 | 802.9 | 802.9 | 802.9 | 0 |
| C | 4010 | 284 | 1129 | 0.38 | 805.0 | 805.0 | 805.0 | 0 |
| LITTLE SILVER CREEK 3/ | | | | | | | | |
| A | 250 | 294 | 1185 | 0.21 | 789.4 | 789.4 | 789.4 | 0 |
| B | 315 | 283 | 1093 | 0.23 | 789.4 | 789.4 | 789.4 | 0 |
| C | 3045 | 337 | 797 | 0.31 | 793.1 | 793.1 | 793.1 | 0 |
| D | 3125 | 256 | 872 | 0.28 | 793.3 | 793.3 | 793.3 | 0 |
| E | 4675 | 252 | 602 | 0.41 | 795.2 | 795.2 | 795.2 | 0 |
| F | 7075 | 268 | 535 | 0.46 | 798.2 | 798.2 | 798.2 | 0 |
| G | 7180 | 257 | 671 | 0.37 | 798.6 | 798.6 | 798.6 | 0 |
| H | 9110 | 179 | 387 | 0.64 | 802.2 | 802.2 | 802.2 | 0 |
| I | 9700 | 230 | 458 | 0.54 | 803.1 | 803.1 | 803.1 | 0 |

1/ DISTANCE IN FEET FROM STUDY LIMIT
2/ WATER SURFACE ELEVATION WITHOUT DEBRIS OR ICE BLOCKAGE
3/ DISTANCE IN FEET FROM CONFLUENCE WITH PINE RIVER
4/ ELEVATIONS USED FOR APPENDIX B PROFILES

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
WAUSHARA COUNTY FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN

FLOODWAY DATA

PINE RIVER, CARPENTER CREEK, LITTLE SILVER CREEK

TABLE2
FLOODWAY DATA

| FLOODING SOURCE | | FLOODWAY | | | BASE FLOOD WATER SURFACE ELEVATION 2/ | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE 1/ | WIDTH (FEET) | SECTION AREA (SQUARE FEET) | MEAN VELOCITY (FEET PER SECOND) | WITHOUT FLOODWAY WITH DAM BREACH | WITHOUT FLOODWAY | WITH 3/ FLOODWAY AND DAM BREACH | INCREASE |
| POPPLE CREEK | | | | | | | | |
| A | 220 | 106 | 90 | 1.01 | 824.6 | 824.6 | 824.6 | 0 |
| B | 285 | 137 | 422 | 0.22 | 827.7 | 827.7 | 827.7 | 0 |
| C | 960 | 72 | 115 | 0.79 | 828.3 | 828.3 | 828.3 | 0 |
| D | 1350 | 20 | 35 | 2.61 | 831.5 | 831.5 | 831.5 | 0 |
| E | 1430 | 134 | 173 | 0.53 | 834.5 | 834.5 | 834.5 | 0 |
| F | 2230 | 30 | 43 | 2.11 | 840.3 | 840.3 | 840.3 | 0 |
| G | 2290 | 54 | 109 | 0.84 | 842.2 | 842.2 | 842.2 | 0 |

1/ DISTANCE IN FEET FROM STUDY LIMIT
2/ WATER SURFACE ELEVATION WITHOUT DEBRIS OR ICE BLOCKAGE
3/ ELEVATIONS USED FOR APPENDIX B PROFILES

U.S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
WAUSHARA COUNTY FLOODPLAIN MANAGEMENT STUDY
WAUSHARA COUNTY, WISCONSIN

FLOODWAY DATA
POPPLE CREEK

# Appendix F

# INVESTIGATIONS AND ANALYSIS

## Investigation and Analysis

The Pine River watershed is a relatively flat watershed with many kettle depressional areas, swamps and depressional lakes. The soils are sandy and rapidly permeable. Of the 99.4 square miles of drainage area only 70.3 square miles directly contribute to surface runoff. The remainder of the drainage area would drain to the water table and appear as prolonged stream flow or base flow. The base flow is estimated to range from 65 to 100 cfs. Due to the nature of the watershed a single storm event model would not produce a reasonable floodflow. Using runoff only would not be realistic because it would be difficult to predict the amount of frozen ground. Sands, especially high water table sands, would not be frozen solid under a snow pack, therefore it is difficult to predict the amount that would infiltrate or runoff. The 100-year March snowpack is eight inches of water equivalent, which would cause a major flood given a fast melt on frozen ground. The USGS regression formula approach gives a more realistic floodflow (1). This approach is based on the historical gage records of streams grouped in areas of similar topography.

The resultant flows used in the study are listed for each cross section and frequency in Appendix A.

The flows and surveyed cross section data were modeled in a step backwater computer program (3). The resultant water surface elevations for each cross section are listed in Appendix E and the prpofiles are shown in Appendix B.

The floodplain, floodway limits, and cross section locations are shown on photomaps in Appendix A.

The outflow of the Saxville spillway during the July 1969 event should equal or exceed the regional flood flow, which would require removing all of the stoplog/panels from the spillway, to keep the water from overtopping the dam. A downstream landowner indicated the approximate flood level during the 1969 event. The landowner was awakened by the sound of the water rushing by his residence. The flood level correlated favorably with the computed regional (100-yr) flood profile of this report.

The 100-year flood elevations are based on the assumption the outlet structures for the Pine River and Poy Sippi Dams are operational and the Saxville Dam has only the top panels removed.

The three dams in the study area, Saxville, Pine River and Poy Sippi were breached utilizing the National Weather Service Dam Break Flood Forecasting Model (DAMBRK)(9) The worst case scenario, no one able to operate the spillways (stoplogs could not be removed) causing the dams to overtop and fail, was used in the model. The failure flood was routed until the floodwaters receded to the regional (100-yr) flood level then terminated. The results are shown on the photomaps in Appendix A, the profiles of Appendix B, and the tables of Appendix E.

# Appendix G

# GLOSSARY

# GLOSSARY

## CHAPTER NR. 116, WISCONSIN'S FLOODPLAIN MANAGEMENT PROGRAM
## NR. 116.03 DEFINITIONS

Channel. A channel is a natural or artificial watercourse with definite bed and banks to confine and conduct the normal flow of water.

Department. Department refers to the State of Wisconsin Department of Natural Resources.

Encroachment. An encroachment is any fill, structure, building, use, accessory use, or development in the floodway.

Encroachment/Floodway Lines. Encroachment/floodway lines are limits of obstruction to floodflows. These lines are on both sides of and generally parallel to the river or stream. The lines are established by assuming that the area landward (outside) of the encroachment/floodway lines will be ultimately developed in such a way that it will not be available to convey floodflows.

Flood. A general and temporary condition of partial or complete inundation of normally dry land areas caused by the overflow or rise of rivers, streams, or lakes.

Flood Frequency. The term flood frequency is a means of expressing the probability of flood occurrences and is generally determined from statistical analyses. The frequency of a particular floodflow is usually expressed as occurring, on the average, once in a specified number of years. Any particular floodflow could, however, occur more frequently than once in any given year.

Flood Fringe. The flood fringe is that portion of the floodplain outside of the floodway, which is covered by floodwaters during the regional flood; it is generally associated with standing water rather than rapidly flowing water.

Floodplain. The floodplain is the land which has been or may be hereafter covered by floodwater during the regional flood. The floodplain includes the floodway and the flood fringe.

Floodplain Management. Floodplain management involves the full range of public policy and action for insuring wise use of floodplains. It includes everything from the collection and dissemination of flood control information to actual acquisition of floodplain lands; and the enactment and administration of codes, ordinances, and statutes for land use in the floodplain.

Flood Proofing. Flood proofing involves any combination of structural provisions, changes, or adjustments to properties and structures subject to flooding, primarily for the purpose of reducing or eliminating flood damage to properties, water and sanitary facilities, structures and contents of buildings in flood hazard areas.

Flood Protection Elevation. The flood protection elevation shall correspond to a point 2 feet of freeboard above the water surface profile associated with the regional flood and the official floodway lines. Also see: Freeboard.

Floodway. The floodway is the channel of a river or stream and those portions of the floodplain adjoining the channel required to carry and discharge the floodwater or floodflows associated with the regional flood.

Freeboard. Freeboard is a factor of safety usually expressed in terms of a certain amount of feet above a calculated flood level. Freeboard compensates for the many unknown factors that contribute to flood heights greater than the height calculated. These unknown factors include, but are not limited to, ice jams, debris accumulation, wave action, obstruction of bridge openings and floodways, the effects of urbanization on the hydrology of the watershed, loss of flood storage areas due to development and aggradation of the river or streambed.

High Flood Damage Potential. High flood damage potential is associated with any danger to life or health and any significant economic loss to a structure or building or its contents.

Hydraulic Floodway Lines. Hydraulic floodway lines shall delineate the channel of the river or stream and those portions of the adjoining floodplains which are reasonably required to carry and discharge the regional floodflow without any measurable increase in flood heights.

Hydraulic Reach. A hydraulic reach along a river or stream is that portion of the river or stream extending from one significant change in the hydraulic character of the river or stream to the next significant change. These changes are usually associated with breaks in the slope of the water surface profile, and may be caused by bridges, dams, expansion and contraction of the waterflow, and changes in streambed slope or vegetation.

Levee. A levee is a continuous dike or embankment of earth constructed parallel to a river or stream to prevent flooding of certain areas of land.

Official Floodway Lines. Official floodway lines are those lines which have been adopted by the county, city, or village, approved by the department, and which are shown on the official floodplain zoning maps and used for regulatory purposes.

Regional Flood. The regional flood is a flood determined to be representative of large floods known to have generally occurred in Wisconsin and which may be expected to occur on a particular stream because of like physical characteristics. The regional flood is based upon a statistical analysis of streamflow records available for the watershed and/or an analysis of rainfall and runoff characteristics in the general watershed region. The flood frequency of the regional flood is once in every 100 years; this means that in any given year there is a 1 percent chance that the regional flood may occur. During a typical 30-year mortgage period, the regional flood has a 26 percent chance of occurring.

Structure. A structure is any manmade object with form, shape, and utility, either permanently or temporarily attached to or placed upon the ground, riverbed, streambed, or lakebed.

Watershed. A watershed is a region or area contributing ultimately to the water supply of a particular watercourse or body of water.

Water Surface Profile. The water surface profile is a graphical representation of the height of the water surface throughout a county, city, or village based upon a certain flow passing through the river or stream. A water surface profile based upon flows occurring during a regional flood is used in regulating the floodplain areas.

# Appendix H

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